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TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE TESTING AND TROUBLESHOOTING

DATA LINK, INSTRUMENT LANDING, AND RADAR BEACON SYSTEMS

NAVY MODEL F/A-18A AND F/A-18B 161353 AND UP

N68936-01-D-0007

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NUMERICAL INDEX OF EFFECTIVE WORK PACKAGES/PAGES

List of Current Changes

Original 0 1 Aug 89	Change 3 15 Jan 93	Change 5 1 Jan 96	Change 7 1 May 02
Change 1 15 Nov 90	Change 4 15 Jan 94	Change 6 15 Jan 97	Change 8 1 Jun 02
Change 2 1 Aug 92			

Only those work packages/pages assigned to the manual are listed in this index. Insert Change 8, dated 1 June 2002. Dispose of superseded work packages/pages. If changed pages are issued to a work package, insert the changed pages in the applicable work package. The portion of text affected in a change or revised work package/page is indicated by change bars or the change symbol "R" in the outer margin of each column of text. Changes to illustrations are indicated by pointing hands or change bars as applicable.

WP Number	Title	WP Number	Title
Title		007 01	Testing - Line/Antenna Return Loss and Insertion Loss
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TPDR-1	List of Technical Publications Deficiency Reports	007 02	Troubleshooting - Instrument Landing System
	Incorporated	008 00	Locator, Instrument Landing System
001 00	Alphabetical Index	009 00	Testing - Built-In Test, Radar Beacon System
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002 00	Introduction	011 00	Testing - Functional Test, Radar Beacon System
003 00	Testing - Built-In Test, Instrument Landing System	012 00	Troubleshooting - Functional Test, Radar Beacon System
004 00	Troubleshooting - Built-In Test Part 1, Instrument Landing System	012 01	Testing - Line/Antenna Return Loss and Insertion Loss, Radar Beacon System
005 00	Troubleshooting - Built-In Test Part 2, Instrument Landing System	013 00	Locator, Radar Beacon System
006 00	Deleted	014 00	Testing - Functional Test, Data Link System
007 00	Deleted	015 00	Troubleshooting - Data Link System
		016 00	Locator, Data Link System

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A	8	6 - 7	1	1 - 14 Added	7	27 - 28	0
TPDR-1	8	8 - 9	0	011 02		015 00	
TPDR-2 Blank	8	10	1	1 - 20 Added	7	1	8
001 00		11 - 13	0	012 00		2 - 8	0
1	7	14 - 16	1	1 - 8	7	9 - 10	1
2 Blank	7	17 - 20	0	9 - 15 Added	7	11 - 17	0
001 01 Deleted	8	007 02		16 Blank	7	18	1
002 00		1 - 7	0	012 01		19	8
1 - 7	8	8 Blank	0	1 - 4	1	20 - 21	1
8 Blank	8	008 00		013 00		22 Blank	1
003 00		1 - 11	0	1 - 11	0	016 00	
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004 00		009 00		014 00			
1 - 10	2	1 - 7	0	1	1		
005 00		8 Blank	0	2 - 8	0		
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006 00 Deleted	0	1 - 8	0	10 - 18	0		
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007 01		1	7	21 - 22	0		
1 - 2	5	2 Blank	7	23	1		
3	1	3 - 16 Deleted	7	24 - 25	0		

LIST OF TECHNICAL PUBLICATIONS DEFICIENCY REPORTS INCORPORATED

ORGANIZATIONAL MAINTENANCE

TESTING AND TROUBLESHOOTING

DATA LINK, INSTRUMENT LANDING, AND RADAR BEACON SYSTEM

This WP supersedes TPDR WP, dated 15 January 1994.

1. The TPDRs listed below have been incorporated in this issue.

IDENTIFICATION NUMBER/ QA SEQUENCE NUMBER	LOCATION
None	

ALPHABETICAL INDEX**ORGANIZATIONAL MAINTENANCE****TESTING AND TROUBLESHOOTING****DATA LINK, INSTRUMENT LANDING, AND RADAR BEACON SYSTEMS****This WP supersedes WP001 00, dated 1 August 1992.**

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INTRODUCTION**ORGANIZATIONAL MAINTENANCE****TESTING AND TROUBLESHOOTING****DATA LINK, INSTRUMENT LANDING, AND RADAR BEACON SYSTEMS**

This WP supersedes WP002 00, dated 15 January 1997.

1. PURPOSE.

2. This manual provides the data required by the technician to do testing and troubleshooting of the system.

3. REQUISITION AND AUTOMATIC DISTRIBUTION OF NAVAIR TECHNICAL MANUALS.

4. Procedures to be used by Naval activities and other Department of Defense activities requiring NAVAIR technical manuals are defined in NAVAIR 00-25-100 and NAVAIRINST 5605.5A.

5. To automatically receive future changes and revisions to NAVAIR technical manuals, an activity must be established on the Automatic Distribution Requirements List (ADRL) maintained by the Naval Air Technical Data and Engineering Service Command (NATEC). To become established on the ADRL, notify your activity central technical publications librarian. If your activity does not have a library, you may establish your automatic distribution by contacting the Commanding Officer, NATEC, Attn: Distribution, NAS North Island, Bldg. 90, P.O. Box 357031, San Diego, CA 92135-7031. Annual reconfirmation of these requirements are necessary to remain on automatic distribution. Please use your NATEC assigned account number whenever referring to automatic distribution requirements.

6. If additional or replacement copies of this manual are required with no attendant changes in the ADRL, they may be ordered by submitting a MILSTRIP requisition in accordance with NAVSUP 485 to Routing Identifier Code "NFZ". MILSTRIP requisitions can be submitted through your supply office, Navy message, or SALTS to DAAS (Defense Automated Address System), or through the DAAS or NAVSUP web sites. For assistance with a MILSTRIP requisition, contact the Naval Inventory Control Point (NAVICP) Publications and Forms Customer Service at DSN 442-2626 or (215) 697-2626, Monday through Friday, 0700 to 1600 Eastern Time.

7. **MANUAL ISSUE DATE.**

8. The date on the title page is the copy freeze date. No additions, deletions, or changes are made after the manual issue date except last minute safety of flight or required maintenance changes. Data collected after the manual issue date will be included in later changes or revisions of the manual.

9. EFFECTIVITIES.

10. Effectivity notes on manual title pages, work package title pages, and within a work package indicate the aircraft or software program to which the data applies. If no effectivity note appears on the work package title page, the work package has the same effectivity as shown on the manual title page. The effectivity notes may use:

NOTE

Aircraft with model designator F/A-18B are the same type and model as TF/A-18A.

- a. Type, model, and series
- b. Bureau number (tail number)
- c. Combination of type, model, series, and bureau numbers
- d. Part number or serial number
- e. Technical directive number
- f. Configuration/identification number

11. The table below shows examples of effectivity notes and their meanings:

Effectivity Note Examples

Effectivity Note	Definition
160777 AND UP	Applicable to all F/A-18A, F/A-18B, F/A-18C and F/A-18D for bureau numbers listed.
F/A-18A, F/A-18B	Applicable to all F/A-18A and F/A-18B.
F/A-18C, F/A-18D	Applicable to all F/A-18C and F/A-18D.
F/A-18A	Applicable to all F/A-18A, but not F/A-18B, F/A-18C and F/A-18D.
F/A-18B	Applicable to all F/A-18B, but not F/A-18A, F/A-18C, and F/A-18D.
F/A-18C	Applicable to all F/A-18C, but not F/A-18A, F/A-18B, and F/A-18D.
F/A-18D	Applicable to all F/A-18D, but not F/A-18A, F/A-18B, and F/A-18C.
F/A-18A, F/A-18C	Applicable to all F/A-18A and F/A-18C, but not to F/A-18B and F/A-18D.
F/A-18B, F/A-18D	Applicable to all F/A-18B and F/A-18D, but not to F/A-18A and F/A-18C.
F/A-18A 160775, 160777 THRU 160782	Only applicable to some bureau numbers of F/A-18A. Not applicable to any F/A-18B, even if an F/A-18B bureau number is within the numbers listed.
F/A-18C 163427, 163430 THRU 163456	Only applicable to some bureau numbers of F/A-18C. Not applicable to any F/A-18D, even if an F/A-18D bureau number is within the numbers listed.
F/A-18B 160784 AND UP	Only applicable to some bureau numbers of F/A-18B. Not applicable to any F/A-18A, even if an F/A-18A bureau number is within the numbers listed.
F/A-18D 163434 THRU 163457	Only applicable to some bureau numbers of F/A-18D. Not applicable to any F/A-18C, even if an F/A-18C bureau number is within the numbers listed.
160775 THRU 160785 BEFORE F/A-18 AFC 772	Applicable to F/A-18A and F/A-18B for bureau numbers listed, before modification by technical directive.
161213 AND UP; ALSO 160775 THRU 160785 AFTER F/A-18 AFC 772	Applicable to aircraft modified during production; also applicable when affected aircraft have been modified by technical directive.

Effectivity Note Examples (Continued)

Effectivity Note	Definition
160775 THRU 160785; WHEN NO. 2 CONTROL PANEL P/N XXXX-X IS INSTALLED	Applicable to F/A-18A and F/A-18B for bureau numbers listed if panel P/N XXXX-X is installed. (Configuration before AVC)
161213 AND UP; ALSO 160775 THRU 160785; WHEN NO. 2 CONTROL PANEL P/N XXXX-Y (AVC-102) IS INSTALLED	Applicable to aircraft modified during production; also applicable to aircraft components modified to the production configuration by technical directive. (Configuration after AVC)
P/N MBEU65101-9, MBEU65101-10 & MBEU65105-3	Applicable to assemblies which are interchangeable between aircraft.
ENGINE NO. 215101 THRU 215109	Applicable to assemblies which are interchangeable between aircraft, but configurations can not be identified by part number.
CONFIG/IDENT NUMBER 84A	The CONFIG/IDENT Number is the program load identification number which identifies the software program loaded in specific programmable units. Refer to A1-F18AC-SCM-000 for CONFIG/IDENT Number tables.

12. TECHNICAL DIRECTIVES.

13. Technical directives are documents which direct the accomplishment, and recording of a retrofit configuration or inspection to delivered aircraft, or aircraft components.

14. **AIRFRAME CHANGE (AFC) AND AIRBORNE TACTICAL SOFTWARE CHANGE (ASC).** Technical directives which change configuration of aircraft structure or equipment installation, i.e. AFC, will list aircraft bureau numbers in effectivity notes and show before and after the AFC. Technical directives which change configuration of operational flight programs (OFP), i.e. ASC, will list the OFP CONFIG/IDENT NUMBER in effectivity notes and show the latest two authorized OFP programs. See AFC and ASC effectivity examples in Effectivity Note Example Table.

15. **AIRCRAFT COMPONENT CHANGES.** Technical directives which change configuration of aircraft components, i.e. AAC, ACC, AVC, AYC, and PPC will

list part numbers in the effectivities. See AVC effectivity examples in Effectivity Note Example table.

16. HISTORICAL RECORD/RECORD OF APPLICABLE TECHNICAL DIRECTIVES.

17. The technical directives affecting this manual are listed in the Record of Applicable Technical Directives of each affected work package. Because an ASC directs all aircraft be modified within 30 days, ASCs are not listed. When all affected aircraft are modified, the before configuration is removed from the manual, and the technical directive entry is removed from each affected work package and entered in the Historical Record of Applicable Technical Directives.

18. TECHNICAL PUBLICATIONS DEFICIENCY REPORT (TPDR).

19. The TPDR (OPNAV FORM 4790/66) is the form for reporting errors and suspected omissions in the technical manuals. Reporting procedures are in OPNAVINST 4790.2 SERIES.

20. QUALITY ASSURANCE PROCEDURES.

21. Procedures or parts of procedures which require quality assurance inspection are identified by the letters

(QA) after the applicable steps. When (QA) is assigned to a step or a heading which is immediately followed by substeps, the inspection requirement is applicable to all substeps.

22. When doing maintenance in any area, a visual inspection of the area will be made for cracks, corrosion and security of component installation before securing the area for flight.

23. **TEST PROCEDURES.**

24. Test procedures are done as part of malfunction isolation, during periodic inspection, or when correct system operation is to be verified.

25. Satisfactory completion of test procedures verifies correct system operation. Do steps in sequence. When doing system test procedures, make sure:

- a. System Required Components identified in procedure are installed.
- b. Related Systems Required identified in procedure are operative.
- c. Steps are done in sequence.
- d. Results are as shown in Normal Indication column, or do Remedy for Abnormal Indication.
- e. Each malfunction is corrected before going to next step by repeating portion of test procedure which failed.

26. **TROUBLESHOOTING.**

27. **TROUBLESHOOTING PROCEDURES.** These procedures provide a series of steps with a NO-YES column. These steps lead to corrective action for the malfunction. Troubleshooting procedures list the data below for use as an aid when doing procedural steps:

- a. Reference to a system schematic.
- b. Reference to a component locator.
- c. List of support equipment and materials required which will always be used in the procedure. Additional support equipment may be required.
- d. An alphabetical list of components which could cause the malfunction.

28. Troubleshooting procedures (logic trees) are referenced from a test procedure Remedy for Abnormal

Indication column or from Fault Reporting Manual. Logic trees are written assuming the logic below:

- a. If doing a test procedure, all steps testing functions before the failed step had normal indication.
- b. For an abnormal indication, only one malfunction exists.
- c. All replacement components are ready for installation.

29. **CONTINUITY TESTING.** When doing continuity tests during troubleshooting, the items listed below must be tested, as applicable.

- a. Loose electrical connectors and bent, broken, or recessed pins.
- b. Continuity between specific pins per procedural step or system schematic.
- c. Shorts between conductor and shield.
- d. Shorts between conductor and surrounding pins on connectors.
- e. Shield continuity per diagrams/system schematics.

30. **TROUBLESHOOTING BEYOND BIT/SYSTEM TESTING.** This is required when any of the conditions listed below exist:

- a. Malfunction was not detected by Built-In Test (BIT).
- b. Malfunction was not detected by a functional test procedure.
- c. When a troubleshooting procedure did not correct the malfunction.
- d. When a troubleshooting procedure does not exist.

31. When any of the conditions listed in paragraph 30 exist, troubleshooting procedure/logic must then be determined. Use steps listed below to aid in determining procedure/logic:

- a. Use referenced system schematic or select applicable system schematic for malfunction. Use schematic for troubleshooting beyond BIT analysis as listed below:

(1) Analyze interface of system components. Determine logic wiring and/or components which may

cause the malfunction. Determine when an interfacing component could cause the malfunction.

(2) When malfunction can be caused by mission computer system signal interface, analyze mission computer system integrated functions and memory inspect suspected Input/Output REF CODES (A1-F18AC-FIM-100).

b. Review VIDS/MAF (OPNAV 4790/60) in Aircraft Discrepancy Book for related malfunctions.

(1) Analyze system/related system maintenance codes reported by Nose Wheelwell Digital Display Indicator.

(2) Determine if aircraft components that have been replaced could cause malfunction.

(3) When a repeat malfunction exists, analyze previous maintenance action completed for the malfunction.

(a) When component replacement is/was done, analyze component history as listed:

1) Determine where component came from.

2) Determine previous history of component (when available).

3) Determine if similar malfunction occurred on another aircraft.

4) Determine if replaced component could be causing existing malfunction.

5) Determine if replacing component again would correct malfunction.

(b) Determine if any rigging or control procedures that have been done could cause the malfunction.

(c) Determine when rigging/boresight procedures should be done to verify system operation for malfunction.

32. TROUBLESHOOTING IMPROVEMENTS.

When a troubleshooting procedure did not correct a malfunction and it is determined that additional or new

troubleshooting is required, submit Technical Publications Deficiency Report (TPDR) providing the information listed below:

a. Fault descriptor for A1-F18()-FRM-000.

b. Corrective action taken for malfunction.

c. Logic used to isolate malfunction.

d. Probable changes that could shorten troubleshooting time for malfunction.

33. DIAGRAMS.

34. System schematics are in A1-F18A()-()-500 series manuals.

35. ILLUSTRATED PARTS BREAKDOWN.

36. Each illustrated parts breakdown (IPB) in this manual has a parts list and illustration for the requisition, storage, authority for use and identification of parts. The illustration is integrated with, and supports, both the maintenance procedure and the parts list within each work package.

37. **PART NUMBER COLUMN.** Footnote symbols in the part number column are defined following the last part listed in each parts list (also see converted part numbers, this WP).

38. **INDENTATION.** The first entry in the description column of each parts list is the figure title. This figure title identifies the parts list with the related maintenance procedure and is shown in the first indent. All parts data required to support the specific maintenance procedure is below the figure title in the second indent.

39. **COMMON NAMES.** The official nomenclature in the description column may not be the name commonly used for an item. If different from the official nomenclature, the common name is shown in parentheses in the description column immediately following the official nomenclature.

40. **COMMERCIAL AND GOVERNMENT ENTITY CODES.** Entity code or manufacturer's name and address are shown in the Description column in parentheses after the nomenclature for the item. These codes are per the Commercial and Government Entity (CAGE) Handbook H4/H8 Series. No code indicates the item is a government standard part.

41. **ATTACHING PARTS.** Attaching parts are identified by (AP) after the nomenclature of the item in the description column. Attaching parts are listed immediately following the part they attach.

42. **SPECIAL HANDLING.** Items requiring special handling such as liquid oxygen components, magnetic control items or on-board oxygen generating system (OBOGS) are identified by the acronym LOX for liquid oxygen, MAG for magnetic control and OXYGEN for on-board oxygen generating system (OBOGS) in the Description column, at the extreme right side.

43. **CONVERTED PART NUMBERS.** Some part numbers appear in the Part Number column which are different than the manufacturer's part number. These are converted part numbers. The unconverted manufacturer's part number is shown in the Description column following the manufacturer's code. Always use the part number in the Part Number column when ordering parts. If an item is not available under the listing in the Part Number column, it may be ordered using the unconverted part number found in the Description column or by using the number found on the part. Examples of special characters as they may appear in the Part Number and Description columns are shown below:

Part Number Column	Description Column
PORM	\pm (Plus or Minus)
DEG	° (Degree)
E	e (Lower case letter)
2	II (Roman Numeral)
0.001	.001 (Decimal)

44. **SUPERSEDED PARTS.** Superseded part numbers have been removed from the Part Number column and placed in the Description column of the superseding part (for example - supersedes 74A582090-1003). This indicates that the superseded part is usable if available through salvage, but should not be requisitioned or made.

45. **NEXT HIGHER ASSEMBLY.** Next higher assembly (NHA) data is not shown using indentation. Next higher procurable assembly (NHPA) data is shown for part numbers that have a procurable NHA. The NHPA and its assigned Source, Maintenance and Recoverability (SM&R) code are in parentheses as the last entry in the Description column. Requisition the NHPA when the part listed in the Part Number column is not available from

supply. The components of assemblies that required disassembly during removal from aircraft, are footnoted in the part number column.

46. **UNITS PER ASSEMBLY COLUMN (UPA).** This column lists the total number of each part required per assembly or subassembly and are not necessarily the total number used in the end item of equipment. The letters AR (As Required) are used for items such as shims when the requirement may vary.

47. **USABLE-ON CODES.** Applicable usable-on codes are identified on the final sheet of each parts list. No entry in the Use On column indicates parts are applicable to all configurations supported by this parts list.

48. **ALTERNATE OR EQUIVALENT PARTS.** An asterisk (*), in the Use On column, identifies alternate parts or equivalent parts that are interchangeable. When a letter code is followed by an asterisk in the Use On column, only the parts with the same letter code are interchangeable. An alternate part may be used when preferred part is not available. The asterisk is omitted for the preferred part(s). Equivalent parts are fully interchangeable. No equivalent part is preferred over another. All equivalent parts are identified by asterisks.

49. **SOURCE, MAINTENANCE AND RECOVERABILITY (SM&R) CODE COLUMN.** The codes used in this column are assigned per NAVAIRINST 4423.3 SERIES and NAVSUPINST 4428.14 SERIES which contain definitions. A dash (-) is shown in the SM&R code column when no code has been assigned. The Aviation Supply Office P2300 series publication is to be used for the most current SM&R Code assignment information if doubt exists as to the validity of any SM&R Code listed in an IPB. Refer to figure 1 for SM&R code explanations.

50. **PARTS LIST INDEX MANUAL, A1-F18AC-IPB-450.** This manual has a numerical index of part numbers and a reference designation index for use with aircraft organizational maintenance manuals. When reference designations or part numbers are known, the index locates specific maintenance instructions and parts data.

51. **NAVY (AN) STANDARD/COMMON NAME NOMENCLATURE.**

52. When an item has both Navy (AN) standard and common name nomenclature assigned, the common name nomenclature will be used in text and on illustrations. Full Navy (AN) standard nomenclature will be used in the Illustrated Parts Breakdown (IPB).

SOURCE (D012)				MAINTENANCE			
1st POSITION		2nd POSITION		USE (D013A)		REPAIR (D013B)	
1st POSITION		2nd POSITION		3rd POSITION		4th POSITION	
P	PROCURE	A	REPLENISH	O	REPLACE OR USE AT ORGANIZATIONAL LEVEL	Z	NO REPAIR (CONSUMABLE)
		B	INSURANCE				
		C	CURE-DATED				
		D	INITIAL	F	REPLACE OR USE AT IMA LEVEL	B	RECONDITION BY ADJUSTMENT, CALIBRATION, LUBRICATION, PLATING, ETC.
		E	END ITEM GSE/STOCKED	H			
		F	GSE/NOT STOCKED	G			
K	REPAIR KIT COMPONENT	F	ORG/IMA	L	REPLACE OR USE AT SPECIALIZED IMA	O	REPAIR AT ORGANIZATIONAL LEVEL
		D	DEPOT				
		B	BOTH KITS				
M	MANUFACTURE	O	ORGANIZATIONAL	D	REPLACE OR USE AT DEPOT	F	REPAIR AT IMA LEVEL
A	ASSEMBLE	F	AFLOAT (INTERMEDIATE)			H	
		H	ASHORE (INTERMEDIATE)			G	
		G	BOTH (INTERMEDIATE)				
X	MISC	D	DEPOT				
		A	REQUEST NHA	Z	NOT REQUIRED THIS APPLICATION	L	REPAIR AT SPECIALIZED IMA
		B	OBTAIN FROM SALVAGE OR ONE TIME BUY			D	REPAIR AT DEPOT OR COMMERCIAL
		C	DIAGRAMS-SCHEMATICS, INSTALL DWGS				

RECOVERABILITY (D013C)		SERVICE OPTION (D012A)	
5th POSITION		6th POSITION	
O	REPAIRABLE ITEM. CONDEMN AT ORGANIZATIONAL LEVEL.	1	APPLIES TO ENGINES ONLY. IDENTIFIES THE HIGHEST (1) TO LOWEST (3) LEVEL OF MAINTENANCE WHICH CAN REPLACE (3rd POSITION OF SM&R CODE) THE ITEM.
		2	
		3	
F H G	REPAIRABLE ITEM. CONDEMN AT INTERMEDIATE LEVEL INDICATED.	4	SAME AS ABOVE. IN ADDITION, ITEM IS A FLR WITH A UNIT COST OF OVER \$5000. THESE CODES ARE NO LONGER ASSIGNED TO NEW, NON-FAMILY RELATED ITEMS.
		5	
		7	
L	REPAIRABLE ITEM. CONDEMN AT SPECIALIZED INTERMEDIATE LEVEL.	6	NORMALLY PROCURED AND STOCK NUMBERED BUT ORGANIC CAPABILITY EXISTS FOR EMERGENCY STOP-GAP REQUIREMENTS.
		E	END-TO-END TEST REQUIRED BY IMA PRIOR TO BCM ACTION.
D	REPAIRABLE ITEM. CONDEMN AT DEPOT OR CONTRACTOR FACILITY.	J	FLR OR CONSUMABLE ITEM. CHANGE 5th POSITION SM&R CODE TO "D" UNDER PICA/SICA. NAVAIR APPROVAL REQUIRED.
		8	SAME AS "J" ABOVE EXCEPT USED FOR ENGINES ONLY. APPLIES TO 2nd LEVEL OF IMA.
A	SPECIAL HANDLING REQUIRED. CONTACT ITEM MANAGER FOR DISPOSAL INSTRUCTIONS	9	SAME AS "J" ABOVE EXCEPT USED FOR ENGINES ONLY. APPLIES TO 3rd LEVEL OF IMA.
		M	ITEM IS A FLR WITH A UNIT COST OF OVER \$5000. THESE CODES ARE NO LONGER ASSIGNED TO NEW, NON-FAMILY RELATED ITEMS.
Z	NON-REPAIRABLE ITEM. CONDEMN AT LEVEL IN 3rd POSITION.	N	ASSIGNED TO XB SOURCE CODE AND INDICATES ITEM IS PROCURED LOCALLY. NOT STOCKED IN THE SUPPLY SYSTEM.
		T	ASSIGNED TO TRAINING DEVICES WITH SOURCE CODE OF "PD". INDICATES ITEM IS NOT A PROCURABLE SPARE. NSN IS ASSIGNED ONLY TO PERMIT VISIBILITY OF REPAIR PART RELATIONSHIP.

Figure 1. SM&R Code Explanation

ORGANIZATIONAL MAINTENANCE

TESTING AND TROUBLESHOOTING

TESTING - BUILT-IN TEST

INSTRUMENT LANDING SYSTEM

This WP supersedes WP003 00, dated 1 August 1992

Reference Material

Line Maintenance Procedures	A1-F18AC-LMM-000
Data Link, Instrument Landing, and Radar Beacon Systems	A1-F18AC-630-200
Instrument Landing System Locator	WP008 00

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Instrument Landing System Built-In Test, Table 1	1

Record of Applicable Technical Directives

None

Table 1. Instrument Landing System Built-In Test

Procedure	Normal Indication	Remedy for Abnormal Indication
System Required Components		
Pulse Decoder KY-651()/ARA-63		
Radio Receiver R-1379()/ARA-63		
Related Systems Required		
Attitude Reference Indicator		
Avionics Cooling System		
Electrical System		
Intercommunication and Audio System		
Maintenance Status Display and Recording System		
Mission Computer System		
Multipurpose Display Group		

Table 1. Instrument Landing System Built-In Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p align="center">Support Equipment Required</p> <p align="center">None</p> <p align="center">Materials Required</p> <p align="center">None</p> <p align="center">NOTE</p> <p>For locator, refer to WP008 00.</p> <p>If a malfunction occurs during this test, make sure circuit breakers shown in WP008 00 are closed.</p> <p>This test requires the glide slope adjustment switch, located on back of Pulse Decoder, to be set at 3°.</p>		
<p>1. PRELIMINARY.</p> <p>a. Observe Digital Display Indicator in nose wheelwell.</p> <p>b. On intercommunication amplifier set ILS UFC/MAN switch to UFC.</p> <p>c. Apply electrical power (A1-F18AC-LMM-000).</p> <p>d. On GND PWR control panel assembly, set and hold 1 and 4 switches to A ON, and 2 switch to B ON for 3 seconds.</p> <p>e. On left and right digital display indicator (LDDI and RDDI), set power switches to DAY or NIGHT and allow 2 minute warmup. Adjust BRT and CONT controls for best display.</p>	<p>WPN SYS FAIL indicator is black (not latched).</p> <p>1. Switches remain on (latched)</p> <p>2. Attitude reference indicator (ARI) vertical needle goes out of view.</p> <p>1. LDDI and RDDI have displays and center pushbutton switch on bottom row is labeled MENU (fig 1).</p>	<p>If latched, do built-in test/reset procedure (A1-F18AC-LMM-000).</p> <p>1. If switches unlatch in 10 to 30 seconds, apply cooling air to aircraft (A1-F18AC-LMM-000).</p> <p>2. If switches do not remain on, troubleshoot (A1-F18AC-FIM-000, WP012 00).</p> <p>Do table 1 (WP004 00).</p> <p>1. No display on LDDI, F/A-18A, do table 1 (A1-F18AC-745-200, WP006 00), F/A-18B, do table 1 (A1-F18AC-745-200, WP007 00).</p>

Table 1. Instrument Landing System Built-In Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
2. PROCEDURE.	2. LDDI has cautions and advisory display (fig 1).	<p>2. No display on RDDI, F/A-18A, do table 2 (A1-F18AC-745-200, WP006 00), F/A-18B, do table 2 (A1-F18AC-745-200, WP007 00).</p> <p>3. If STANDBY is displayed F/A-18A, do table 2 (A1-F18AC-745-200, WP004 00). F/A-18B, do table 2 (A1-F18AC-745-200, WP005 00).</p> <p>4. If BRT or CONT controls do not affect display, replace left or right digital display indicator (A1-F18AC-745-300, WP004 00).</p> <p>Replace left digital display indicator (A1-F18AC-745-300, WP004 00).</p>
<p style="text-align: center;">NOTE</p> <p>Instrument landing system (ILS) option displays disappear from equipment control after 30 seconds. To make displays reappear, press ILS function select switch again.</p> <p>During ILS testing to isolate a failure of (DEGD) the system must be completely checked to verify the ILS operation on all frequencies by selecting and running BIT on ILS channels 1-10 (BIT test frequencies for channels 1-10 and 11-20 are the same).</p>		
a. On Electronic Equipment Control (equipment control), press ILS function select switch. Adjust BRT/DIM control for best display.	CHNL is displayed on option display and last ILS channel selected is displayed on scratch pad display.	Do Electronic Equipment Control Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
b. On equipment control, press ON/OFF switch.	1. ON is displayed on equipment control scratch pad display.	Do Electronic Equipment Control Lamp and Switch Test (A1-F18AC-741-200, WP004 00).

Table 1. Instrument Landing System Built-In Test (Continued)

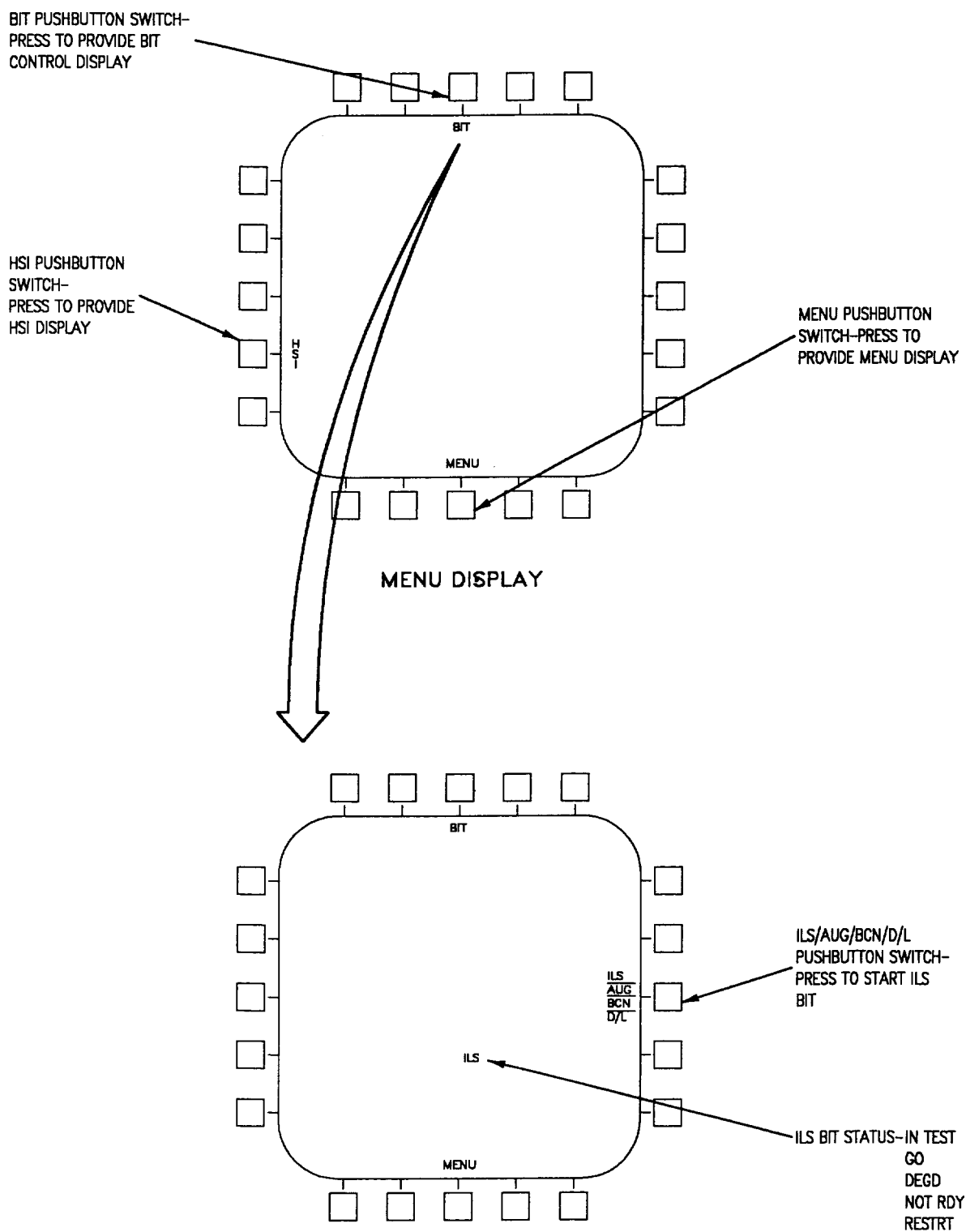
Procedure	Normal Indication	Remedy for Abnormal Indication
	2. ARI vertical needle remains out of view and horizontal needle displays full fly up position.	1. If both needles are centered, do table 2 (WP004 00). 2. If vertical needle is centered, do table 3 (WP004 00). 3. If horizontal needle is centered, do table 4 (WP004 00).
c. On RDDI, press MENU pushbutton switch until BIT pushbutton switch option is displayed.	RDDI has MENU display and center pushbutton switch on top is labeled BIT (fig 1).	Replace right digital display indicator (A1-F18AC-745-300, WP004 00).
d. On RDDI, press BIT pushbutton switch.	RDDI has BIT control display (fig 1).	Replace right digital display indicator (A1-F18AC-745-300, WP004 00).
e. On head-up display unit (HUD), turn HUD SYM-BRT control cw from OFF position. Set HUD SYM-DAY/AUTO/NIGHT switch to either DAY or NIGHT as required for ambient light conditions. Adjust HUD SYM-BRT control for best display. Allow a 2 minute warmup.	HUD has display.	If no display on HUD F/A-18A, do table 4 (A1-F18AC-745-200, WP006 00), F/A-18B, do table 4 (A1-F18AC-745-200, WP007 00).
f. On HUD, set HUD SYM- NORM/REJ 1/REJ 2 switch to NORM.		
g. On LDDI, press MENU pushbutton switch.	LDDI has MENU display (fig 1).	Replace left digital display indicator (A1-F18AC-745-300, WP004 00).
h. On LDDI, press HSI pushbutton switch.	LDDI has HSI display (fig 1).	Replace left digital display indicator (A1-F18AC-745-300, WP004 00).
i. On LDDI, press ILS pushbutton switch.	ILS pushbutton label is boxed on HSI display.	Replace left digital display indicator (A1-F18AC-745-300, WP004 00).
j. On equipment control enter the ILS channel number (1-10) using keyboard switches. (If first time through, set to channel 1).	Number of pressed keyboard switch is displayed as channel number(s) are entered.	Do Electronic Equipment Control Lamp and Switch Test (A1-F18AC-741-200, WP004 00).

Table 1. Instrument Landing System Built-In Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>k. Press ENT keyboard switch.</p> <p>1. On RDDI, press ILS/AUG/BCN/D/L pushbutton switch (fig 1). Repeat steps j thru l to test each ILS channel (1-10). Record ILS BIT status for each channel tested.</p>	<p>ILS channel number blinks once on scratch pad display, and then is displayed steady.</p> <p>1. ARI vertical needle oscillates 1/3 scale fly right and 1/3 scale fly left at a 4 second per cycle rate. ARI horizontal needle is centered (3° glide slope) (fig 1).</p> <p>2. HUD azimuth and elevation deviation bars are displayed and give same indications as ARI needles (fig 1).</p> <p>3. ILS BIT status displays IN TEST and then GO.</p>	<p>If a flashing "Error" is displayed on scratch pad display, press CLR keyboard and repeat steps j and k using a valid ILS channel number.</p> <p>1. If both needles are centered, do table 1 (WP005 00).</p> <p>2. Make sure glide slope adjustment switch on pulse-decoder is set to 3.0 (A1-F18AC-630-300, WP004 00).</p> <p>3. If needles continue to give wrong indications, do table 2 (WP005 00).</p> <p>Do table 3 (WP005 00).</p> <p>1. If DEGD or NOT RDY displayed, replace control-converter (A1-F18AC-741-300, WP005 00).</p> <p>2. If RESTRT displayed, press ILS/AUG/BCN/D/L pushbutton switch. If RESTRT still displayed, replace control-converter (A1-F18AC-741-300, WP005 00)</p>
<p>m. On equipment control, press ILS function select switch then ON/OFF switch.</p>	<p>ON disappears from scratch pad display. CHNL is displayed on option display. Last ILS channel selected is displayed on scratch pad display.</p>	<p>Replace control-converter (A1-F18AC-741-300, WP005 00).</p>

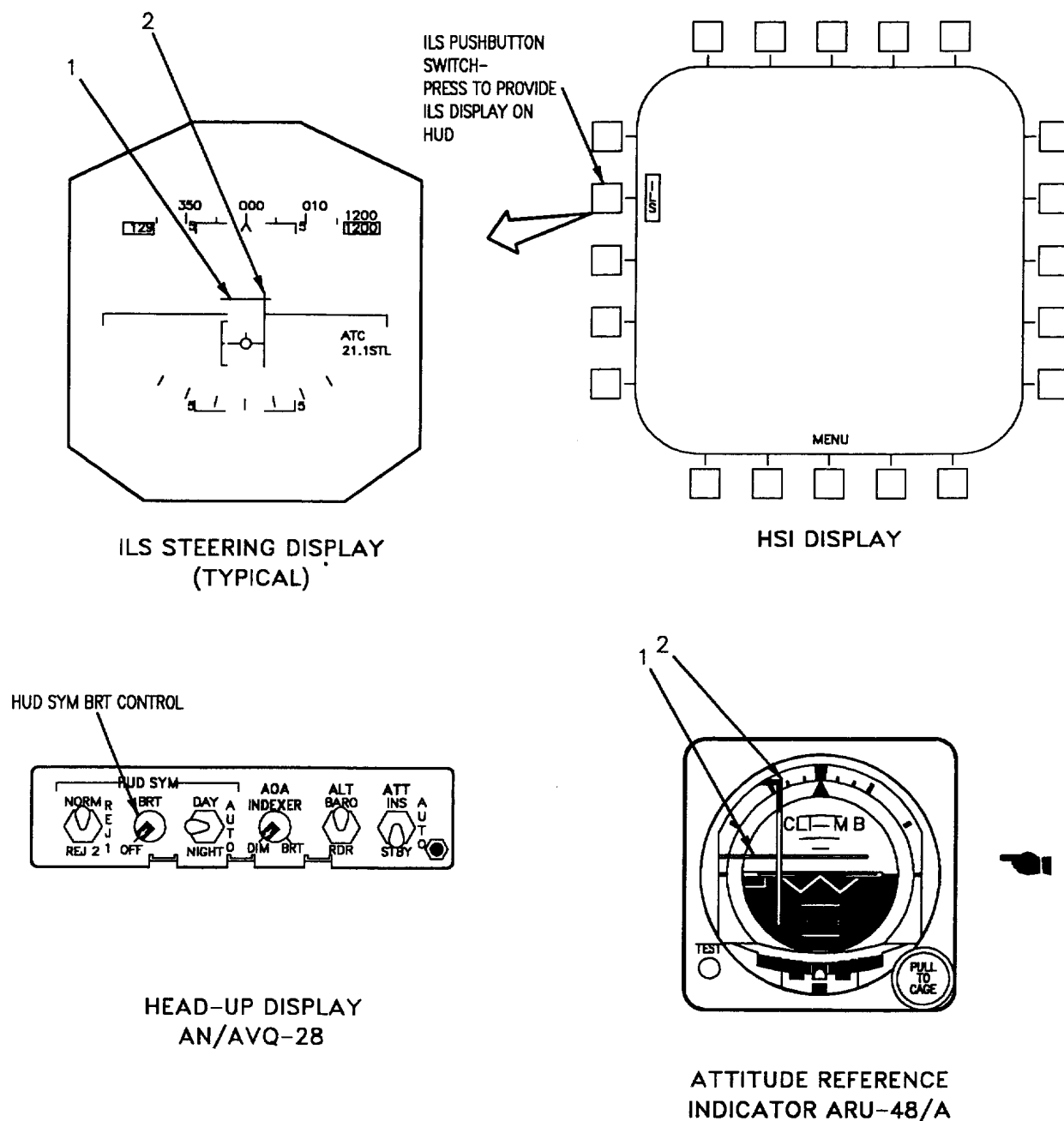
Table 1. Instrument Landing System Built-In Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>n. On intercommunication amplifier-control, set ILS UFC/MAN switch to MAN.</p> <p>o. On equipment control, press ILS function select switch.</p> <p>3. FINAL.</p> <p>a. On intercommunication amplifier-control, set ILS UFC/MAN switch to UFC.</p> <p>b. On HUD, turn HUD SYM-BRT control ccw to OFF position.</p> <p>c. On LDDI and RDDI, set power switches to OFF.</p> <p>d. Remove electrical power (A1-F18AC-LMM-000).</p> <p>e. Observe digital display Indicator in nose wheelwell.</p>	<p>ARI vertical needle goes out of view and horizontal needle goes to full fly up position.</p> <p>MAN is displayed vertically on equipment control option displays (fig 1).</p> <p>WPN SYS FAIL indicator is black (not latched).</p>	<p>Do table 4 (WP005 00).</p> <p>Do table 5 (WP005 00).</p> <p>Read, record, and then reset maintenance codes (A1-F18AC-LMM-000). If code 004 exists, replace control-converter (A1-F18AC-741-300, WP005 00).</p>



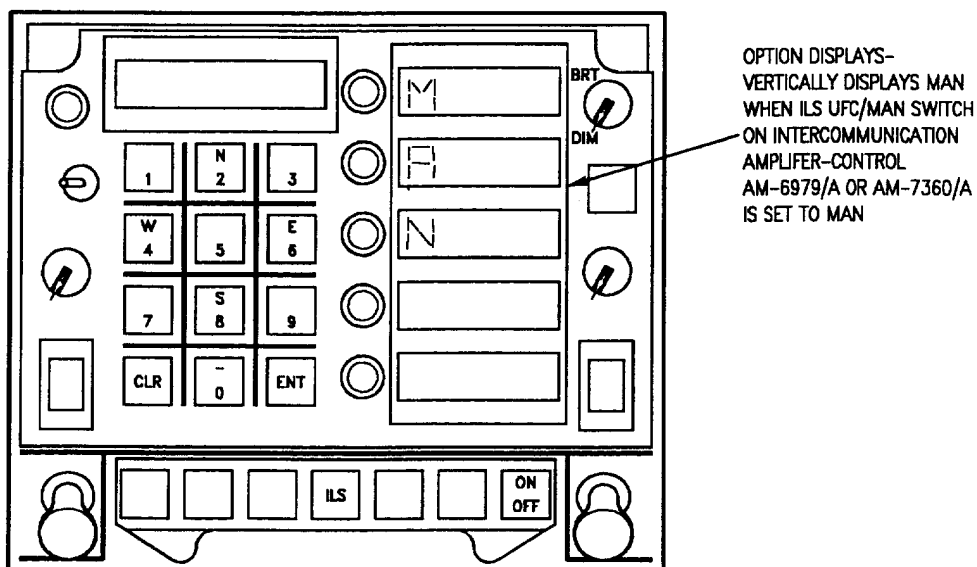
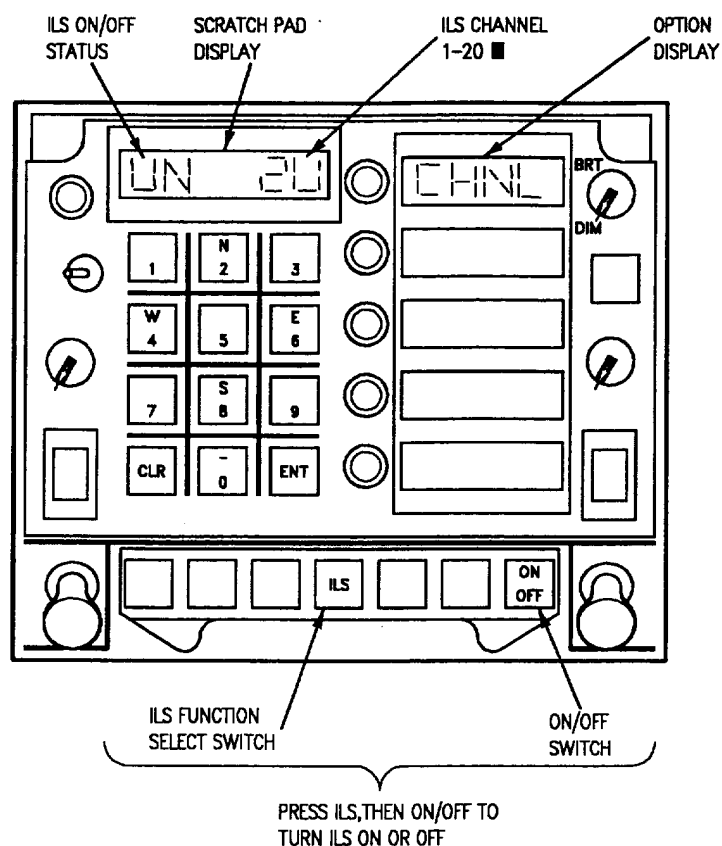
BIT CONTROL DISPLAY

Figure 1. Cockpit Displays (Sheet 1)



INDEX NO.	NOMENCLATURE	ILS BIT INDICATIONS
1	HORIZONTAL NEEDLE (ARI) ELEVATION DEVIATION BAR (HUD)	ON THE GLIDE SLOPE
2	VERTICAL NEEDLE (ARI) AZIMUTH DEVIATION BAR (HUD)	OSCILLATING BETWEEN 1/3 SCALE FLY LEFT AND 1/3 SCALE FLY RIGHT

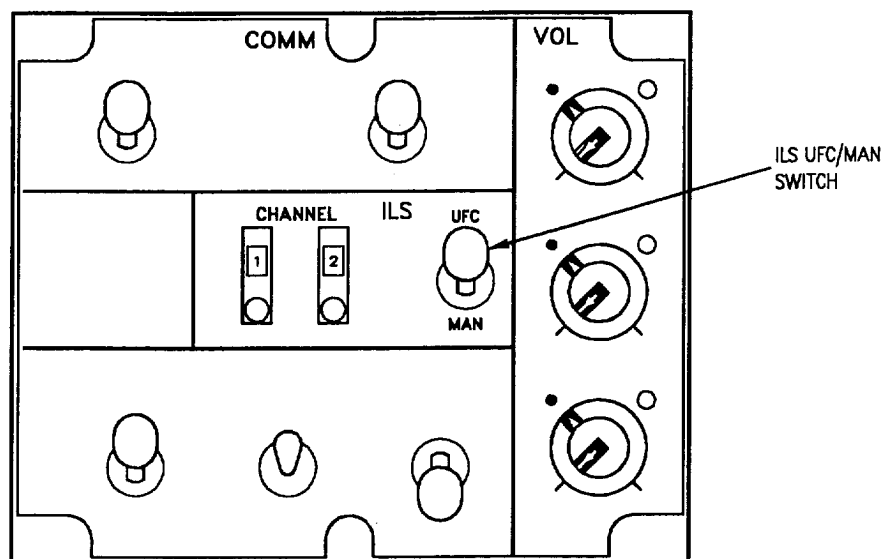
Figure 1. Cockpit Displays (Sheet 2)



ELECTRONIC EQUIPMENT CONTROL C-10380/ASQ

18AC-630-20-(4-3)18-CATI

Figure 1. Cockpit Displays (Sheet 3)



INTERCOMMUNICATION AMPLIFIER-CONTROL
AM-6979/A OR AM-7360/A

Figure 1. Cockpit Displays (Sheet 4)

ORGANIZATIONAL MAINTENANCE
TESTING AND TROUBLESHOOTING
TROUBLESHOOTING - BUILT-IN TEST PART 1
INSTRUMENT LANDING SYSTEM

This WP supersedes WP004 00, dated 1 August 1989

Reference Material

Line Maintenance Procedures	A1-F18AC-LMM-000
Line Maintenance Access Doors	A1-F18AC-LMM-010

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Record of Applicable Technical Directives

None

Table 1. ARI Needles Do Not Go Out of View


Support Equipment Required		
NOTE		
Alternate item type designations or part numbers are listed in parentheses.		
Part Number or Type Designation	Nomenclature	
260-6XLP (AN/USM-311)	Multimeter	
Materials Required		
None		
NOTE		
Instrument Landing System Functional Schematic (A1-F18AC-630-500, WP004 00) may be used when doing this procedure.		
For locator, refer to WP008 00.		
Malfunction is caused by one of the items below:		
Aircraft Wiring Attitude Reference Indicator ARU-48/A No. 2 Relay Panel Assembly		
Procedure	No	Yes
		
To prevent damage to low level devices (switches/relay contacts), do not test for continuity with multimeter on the RX 1 scale. Pin to pin tests that do not go through switches/relay contacts may use the RX 1 scale.		
NOTE		
The question used in logic tree “Does continuity exist” means to test for the items listed below:		
<ol style="list-style-type: none"> 1. Pin to pin test per procedural step. 2. Shorts to ground. 3. Shorts between surrounding pins on connectors. 4. Shorts between shield and conductors. 5. Shield continuity. 		

Table 1. ARI Needles Do Not Go Out of View (Continued)

Procedure	No	Yes
a. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Remove Attitude Reference Indicator ARU-48/A (A1-F18AC-730-300, WP012 00).		
(3) Does continuity exist from 33P-J015 pin 11 to 33P-J015 pin 19?	b	c
b. Replace Attitude Reference Indicator ARU-48/A (A1-F18AC-730-300, WP012 00). Do step f	-	-
c. Do the substeps below:		
(1) Open door 14R (A1-F18AC-LMM-010).		
(2) Disconnect 52P-F058E from no. 2 relay panel assembly.		
(3) Does continuity exist from 52P-F058E pin 71 to 52P-F058E pin 61?	e	d
d. Isolate defective aircraft wiring from 33P J015 pin 11 to 52P-F058E pin 71 (A1-F18A() WDM-000). Do step f	-	-
e. Isolate between no. 2 relay panel assembly wiring and 74K-F009 (A1-F18AC-420-300, WP032 00). Do step f	-	-
f. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:		
(1) 33P-J015		
(2) 52P-F058E		
(3) Attitude Reference Indicator ARU-48/A		
(4) Door 14R	-	-

Table 2. ARI Needles Are Centered

Support Equipment Required		
NOTE		
Alternate item type designations or part numbers are listed in parentheses.		
Part Number or Type Designation	Nomenclature	
260-6XLP (AN/USM-311)	Multimeter	
Materials Required		
None		
NOTE		
Instrument Landing System Functional Schematic (A1-F18AC-630-500, WP004 00) may be used when doing this procedure.		
For locator, refer to WP008 00.		
Malfunction is caused by one of the items below:		
Aircraft Wiring		
No. 2 Relay Panel Assembly		
Pulse Decoder KY-651()/ARA-63		
Pulse Decoder KY-651()/ARA-63, Fuse F4 (0.75A)		
Procedure	No	Yes
<div><div>CAUTION</div><p>To prevent damage to low level devices (switches/relay contacts), do not test for continuity with multimeter on the RX1 scale. Pin to pin tests that do not go through switches/relay contacts may use the RX 1 scale.</p></div>		

Table 2. ARI Needles Are Centered (Continued)

Procedure	No	Yes
<p style="text-align: center;">NOTE</p> <p>The question used in logic tree “Does continuity exist” means to test for the items listed below:</p> <ol style="list-style-type: none"> 1. Pin to pin test per procedural step. 2. Shorts to ground. 3. Shorts between surrounding pins on connectors. 4. Shorts between shield and conductors. 5. Shield continuity. 		
a. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 13R (A1-F18AC-LMM-010).		
(3) Remove fuse F4 from Pulse Decoder KY-651()/ARA-63 and test for continuity.		
(4) Is fuse F4 good?	b	c
b. Replace Pulse Decoder KY-651()/ARA-63 (A1-F18AC-630-300, WP004 00). Do step j	-	-
c. Do the substeps below:		
(1) Install fuse F4.		
(2) Disconnect 74P-F002A from Pulse Decoder KY-651()/ARA-63.		
(3) Apply electrical power (A1-F18AC-LMM-000).		
(4) On GND PWR control panel assembly, set 2 switch to B ON.		
(5) On Electronic Equipment Control C-10380/ASQ, press ILS function select switch, then ON/OFF switch.		
(6) Does 28vdc exist at 74P-F002A pin 1?	d	g
d. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 14R (A1-F18AC-LMM-010).		
(3) Disconnect 52P-F058E from no. 2 relay panel assembly.		

Table 2. ARI Needles Are Centered (Continued)

Procedure	No	Yes
(4) Does continuity exist from 74P-F002A pin 1 (door 13R) to 52P-F058E pin 87?	e	f
e. Isolate defective aircraft wiring (A1-F18A()-WDM-000). Do step j	-	-
f. Malfunction has been isolated to no. 2 relay panel assembly wiring or 74K-F009 (A1-F18AC-420-300, WP032 00). Do step j	-	-
g. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Disconnect 74P-F002B from Pulse Decoder KY-651()/ARA-63.		
(3) Does continuity exist from 2J1 pin 1 to 2J2 pin 7	b	h
h. Does continuity exist from 74P-F002B pin 6 to 74P-F002B pin 7?	e	b
i. If disconnected, removed, or opened during this procedure, make sure the items listed are connected, installed, or closed:		
(1) 74P-F002A		
(2) 74P-F002B		
(3) 62P-F058E		
(4) Door 13R		
(5) Door 14R	-	-

Table 3. ARI Vertical Needle Is Centered

Support Equipment Required	
NOTE	
Alternate item type designations or part numbers are listed in parentheses.	
Part Number or Type Designation	Nomenclature
260-6X LP (AN/USM-311)	Multimeter

Table 3. ARI Vertical Needle Is Centered (Continued)


Materials Required		
None		
NOTE		
Instrument Landing System Functional Schematic (A1-F18AC-630-500, WP004 00) may be used when doing this procedure.		
For locator, refer to WP008 00.		
Malfunction is caused by one of the items listed below:		
Aircraft Wiring Attitude Reference Indicator ARU-48/A Pulse Decoder KY-651()/ARA-63		
Procedure	No	Yes
<div style="text-align: center;">  </div> <p>To prevent damage to low level devices (switches/relay contacts), do not test for continuity with multimeter on the RX 1 scale. Pin to pin tests that do not go through switches/relay contacts may use the RX 1 scale.</p> <div style="text-align: center;"> NOTE </div> <p>The question used in logic tree “Does continuity exist” means to test for the items listed below:</p> <ol style="list-style-type: none"> 1. Pin to pin test per procedural step. 2. Shorts to ground. 3. Shorts between surrounding pins on connectors. 4. Shorts between shield and conductors. 5. Shield continuity. <p>a. Do the substeps below:</p> <ol style="list-style-type: none"> (1) Remove Attitude Reference Indicator ARU-48/A (A1-F18AC-730-300, WP012 00). (2) Apply electrical power (A1-F18AC-LMM-000). (3) On GND PWR control panel assembly, set and hold 2 switch to B ON for 3 seconds. (4) On Electronic Equipment Control C-10380/ASQ, press ILS function select switch, then ON/OFF switch. 		

Table 3. ARI Vertical Needle Is Centered (Continued)

Procedure	No	Yes
(5) Does 8vdc exist from 33P-J015 pin 6(+) to 33P-J015 pin 7(-)?	b	e
b. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 13R (A1-F18AC-LMM-010).		
(3) Disconnect 74P-F002A from Pulse Decoder KY-651()/ARA-63.		
(4) Does continuity exist from:		
74P-F002A pin 36 to 33P-J015 pin 6		
74P-F002A pin 31 to 33P-J015 pin 7?	c	d
c. Isolate defective aircraft wiring (A1-F18A()-WDM-000). Do step f	-	-
d. Replace Pulse Decoder KY-651()/ARA-63 (A1-F18AC-630-300, WP004 00). Do step f	-	-
e. Replace Attitude Reference Indicator ARU-48/A (A1-F18AC-730-300, WP012 00). Do step f	-	-
f. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:		
(1) 74P-F002A		
(2) Attitude Reference Indicator ARU-48/A		
(3) Door 13R	-	-

Table 4. ARI Horizontal Needle Is Centered

Support Equipment Required	
NOTE	
Alternate type designations or part numbers are listed in parentheses.	
Part Number or Type Designation	Nomenclature
260-6XLP (AN/USM-311)	Multimeter

Table 4. ARI Horizontal Needle Is Centered (Continued)


Materials Required		
None		
NOTE		
Instrument Landing System Functional Schematic (A1-F18AC-630-500, WP004 00) may be used when doing this procedure.		
For locator, refer to WP008 00.		
Malfunction is caused by one of the items listed below:		
Aircraft Wiring Attitude Reference Indicator ARU-48/A Pulse Decoder KY-651()/ARA-63		
Procedure	No	Yes
<div style="text-align: center;">  </div> <p>To prevent damage to low level devices (switches/relay contacts), do not test for continuity with multimeter on the RX 1 scale. Pin to pin tests that do not go through switches/relay contacts may use the RX 1 scale.</p> <div style="text-align: center;"> NOTE </div> <p>The question used in logic tree “Does continuity exist” means to test for the items listed below:</p> <ol style="list-style-type: none"> 1. Pin to pin test per procedural step. 2. Shorts to ground. 3. Shorts between surrounding pins on connectors. 4. Shorts between shield and conductors. 5. Shield continuity. <p>a. Do the substeps below:</p> <ol style="list-style-type: none"> (1) Remove Attitude Reference Indicator ARU-48/A (A1-F18AC-730-300, WP012 00). (2) Apply electrical power (A1-F18AC-LMM-000). (3) On GND PWR control panel assembly, set and hold 2 switch to B ON for 3 seconds. (4) On Electronic Equipment Control C-10380/ASQ, press ILS function select switch, then ON/OFF switch. 		

Table 4. ARI Horizontal Needle Is Centered (Continued)

Procedure	No	Yes
(5) Does 8vdc exist from 33P-J015 pin 9(+) to 33P-J015 pin 8(-)?	b	e
b. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 13R (A1-F18AC-LMM-010).		
(3) Disconnect 74P-F002A from Pulse Decoder KY-651()/ARA-63.		
(4) Does continuity exist from:		
74P-F002A pin 37 to 33P-J015 pin 9		
74P-F002A pin 32 to 33P-J015 pin 8?	c	d
c. Isolate defective aircraft wiring (A1-F18A()-WDM-000). Do step f	-	-
d. Replace Pulse Decoder KY-651()/ARA-63 (A1-F18AC-630-300, WP004 00). Do step f	-	-
e. Replace Attitude Reference Indicator ARU-48/A (A1-F18AC-730-300, WP012 00). Do step f	-	-
f. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:		
(1) 74P-F002A		
(2) Attitude Reference Indicator ARU-48/A		
(3) Door 13R	-	-

ORGANIZATIONAL MAINTENANCE
TESTING AND TROUBLESHOOTING
TROUBLESHOOTING - BUILT-IN TEST PART 2
INSTRUMENT LANDING SYSTEM

Reference Material

Line Maintenance Procedures	A1-F18AC-LMM-000
Line Maintenance Access Doors	A1-F18AC-LMM-010

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Record of Applicable Technical Directives

None

Table 1. ARI Needles Are Centered


Support Equipment Required		
NOTE		
Alternate item type designations or part numbers are listed in parentheses.		
Part Number or Type Designation	Nomenclature	
260-6XLP (AN/USM-311)	Multimeter	
Materials Required		
None		
NOTE		
Instrument Landing System Functional Schematic (A1-F18AC-630-500, WP004 00) may be used when doing this procedure.		
For locator, refer to WP008 00.		
Malfunction is caused by one of the items listed below:		
Aircraft Wiring Attitude Reference Indicator ARU-48/A Control-Converter C-10382/A No. 2 Relay Panel Assembly No. 7 Circuit Breaker/Relay Panel Assembly		
Procedure	No	Yes
<div></div> <p>To prevent damage to low level devices (switches/relay contacts), do not test for continuity with multimeter on the RX 1 scale. Pin to pin tests that do not go through switches/relay contacts may use the RX 1 scale.</p>		

Table 1. ARI Needles Are Centered (Continued)

Procedure	No	Yes
<p style="text-align: center;">NOTE</p> <p>The question used in logic tree “Does continuity exist” means to test for the items listed below:</p> <ol style="list-style-type: none"> 1. Pin to pin test per procedural step. 2. Shorts to ground. 3. Shorts between surrounding pins on connectors. 4. Shorts between shield and conductors. 5. Shield continuity. 		
a. On Intercommunication Amplifier-Control AM-6979/A or AM-7360/A, set ILS UFC/MAN switch to MAN. Do ARI needles deflect out of view?	e	b
b. Do the substeps below:		
(1) Remove electrical power(A1-F18AC-LMM-000).		
(2) Open door 14R (A1-F18AC-LMM-010).		
(3) Disconnect 52P-F058E from no. 2 relay panel assembly.		
(4) Open door 13R (A1-F18AC-LMM-010).		
(5) Disconnect 82P-F001C from Control-Converter C-10382/A.		
(6) Does continuity exist from 52P-F058E pin 74 (door 14R) to 82P-F001C pin 25 (door 13R)?	c	d
c. Isolate defective aircraft wiring (A1-F18A()-WDM-000). Do step m	-	-
d. Replace Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00). Do step m	-	-
e. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Remove Attitude Reference Indicator ARU-48/A (A1-F18AC-730-300, WP012 00).		
(3) Apply electrical power (A1-F18AC-LMM-000).		
(4) On Intercommunication Amplifier-Control AM-6979/A or AM-7360/A, set ILS UFC/MAN switch to MAN.		
(5) Does continuity exist from 33P-J015 pin 11 to aircraft ground?	g	f

Table 1. ARI Needles Are Centered (Continued)

Procedure	No	Yes
f. Replace Attitude Reference Indicator ARU-48/A (A1-F18AC-730-300, WP012 00)	-	-
g. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 14R (A1-F18AC-LMM-010).		
(3) Disconnect 52P-F058E from no. 2 relay panel assembly.		
(4) Does continuity exist from 33P-J015 pin 11 to 52P-F058E pin 71?	c	h
h. Do the substeps below:		
(1) Apply electrical power (A1-F18AC-LMM-000).		
(2) Does 28vdc exist at 52P-F058F pin 86?	i	k
i. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 10L (A1-F18AC-LMM-010).		
(3) Disconnect 52P-C057D from no. 7 circuit breaker/relay panel assembly.		
(4) Does continuity exist from 52P-F058E pin 86 (door 14R) to 52P-C057D pin 54?	c	j
j. Isolate between no. 7 circuit breaker/relay panel assembly wiring and 74CBC006 (A1-F18AC-420-300, WP027 00). Do step m	-	-
k. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 13R (A1-F18AC-LMM-010).		
(3) Disconnect 82P-F001C from Control-Converter C-10382/A.		
(4) Does continuity exist from 52P-F058E pin 74 (door 14R) to 82P-F001C pin 25?	c	l
l. Malfunction has been isolated to no. 2 relay panel assembly wiring or 74K-F009 (A1-F18AC-420-300, WP032 00), or to Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00). Do step m	-	-

Table 1. ARI Needles Are Centered (Continued)

Procedure	No	Yes
m. If disconnected, removed, or opened during this procedure, make sure the items listed below are connected, installed, or closed:		
(1) 52P-F058E		
(2) 52P-C057D		
(3) 82P-F001C		
(4) Attitude Reference Indicator ARU-48/A		
(5) Door 10L		
(6) Door 13R		
(7) Door 14R	-	-

Table 2. ARI Needles Give Wrong Indications

Support Equipment Required	
NOTE	
Alternate type designations or part numbers are listed in parentheses.	
Part Number or Type Designation	Nomenclature
260-6XLP (AN/USM-311)	Multimeter
1502-04	Time Domain Reflectometer
Materials Required	
None	
NOTE	
Instrument Landing System Functional Schematic (A1-F18AC-630-500, WP004 00) may be used when doing this procedure.	
For locator, refer to WP008 00.	

Table 2. ARI Needles Give Wrong Indications (Continued)


Malfunction is caused by one of the items listed below:		
Aircraft Wiring Coax Cable Control-Converter C-10382/A Intercommunication Amplifier-Control AM-6979/A or AM-7360/A No. 2 Relay Panel Assembly No. 7 Circuit Breaker/Relay Panel Assembly Pulse Decoder KY-651()/ARA-63 Pulse Decoder KY-651()/ARA-63, Fuse F1, F3, or F5 (1.5A) Radio Receiver R-1379()/ARA-63		
Procedure	No	Yes
<div style="text-align: center;">  <p>CAUTION</p> </div> <p>To prevent damage to low level devices (switches/relay contacts), do not test for continuity with multimeter on the RX 1 scale. Pin to pin tests that do not go through switches/relay contacts may use the RX 1 scale.</p> <p style="text-align: center;">NOTE</p> <p>The question used in logic tree “Does continuity exist” means to test for the items listed below:</p> <ol style="list-style-type: none"> 1. Pin to pin test per procedural step. 2. Shorts to ground. 3. Shorts between surrounding pins on connectors. 4. Shorts between shield and conductors. 5. Shield continuity. 		
a. Do the substeps below:		
{1} Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 13R (A1-F18AC-LMM-010). Observe fault indicator on Pulse Decoder KY-651()/ARA-63.		
(3) Open door 3 (A1-F18AC-LMM-010). Observe fault indicator on Radio Receiver R-1379()/ARA-63.		
(4) Are both fault indicators latched?	g	b
b. Replace Radio Receiver R-1379()/ARA-63 (A1-F18AC-630-300, WP003 00), and Pulse Decoder KY-651()/ARA-63 (A1-F18AC-630-300, WP004 00). Does problem still exist? ...	aa	c

Table 2. ARI Needles Give Wrong Indications (Continued)

Procedure	No	Yes
c. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Disconnect 74P-F002B from Pulse Decoder KY-651()/ARA-63.		
(3) Open door 3 (A1-F18AC-LMM-010). Disconnect 74P-B001A from Radio Receiver R-1379()/ARA-63.		
(4) Does continuity exist from:		
74P-B001A pin 24 to 74P-F002B pin 19		
74P-B001A pin 33 to 74P-F002B pin 33		
74P-B001A pin 29 to 74P-F002B pin 20		
74P-B001A pin 31 to 74P-F002B pin 31		
74P-B001A pin 32 to 74P-F002B pin 32		
74P-B001A pin 35 to 74P-F002B pin 35?	d	e
d. Isolate defective aircraft wiring (A1-F18A()-WDM-000). Do step aa	-	-
e. Open door 14R (A1-F18AC-LMM-010). Disconnect 52P-F058E from no. 2 relay panel assembly. Does continuity exist from:		
74P-B001A pin 2 to 52P-F058E pin 89		
74P-F002B pin 7 to 52P-F058E pin 78?	d	f
f. Isolate between no. 2 relay panel assembly wiring and 74K-F010 (A1-F18AC-420-300, WP032 00). Do step aa	-	-
g. Is fault indicator latched on Pulse Decoder KY-651()/ARA-63?	v	h
h. On Pulse Decoder KY-651()/ARA-63, remove fuses F1, F3, and F5 and test for continuity. Does continuity exist?	i	j
i. Replace Pulse Decoder KY-651()/ARA-63 (A1-F18AC-630-300, WP004 00). Do step aa	-	-
j. Do the substeps below:		
(1) Install fuses F1, F3, and F5.		
(2) Disconnect 74P-F002A from Pulse Decoder KY-651()/ARA-63.		
(3) Apply electrical power (A1-F18AC-LMM-000).		
(4) Does 115vac exist from:		
74P-F002A pin 4 to aircraft ground		
74P-F002A pin 5 to aircraft ground		
74P-F002A pin 6 to aircraft ground?	k	m

Table 2. ARI Needles Give Wrong Indications (Continued)

Procedure	No	Yes
k. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 10L (A1-F18AC-LMM-010). Disconnect 52P-C057D from no. 7 circuit breaker/relay panel assembly.		
(3) Does continuity exist from:		
52P-C057D pin 69 to 74P-F002A pin 4		
52P-C057D pin 68 to 74P-F002A pin 5		
52P-C057D pin 67 to 74P-F002A pin 6?	d	l
l. Isolate between no. 7 circuit breaker/relay panel assembly wiring and 74CBC003, 74CBC004, or 74CBC005 (A1-F18AC-420-300, WP027 00). Do step aa	-	-
m. Replace Pulse Decoder KY-651()/ARA-63 (A1-F18AC-630-300, WP004 00). Does problem still exist?	n	o
n. Remove electrical power (A1-F18AC-LMM-000). Do step aa	-	-
o. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Disconnect 74P-B001C from Radio Receiver R-1379()/ARA-63 (door 3).		
(3) Disconnect 74P-F002F from Pulse Decoder KY-651()/ARA-63 (door 13R).		
(4) Using table 6 (this WP) and Repair Tools and Equipment, Time Domain Reflectometer (A1-F18AC-WRM-000), test coax cables from 74P-F002F to 74PB001C.		
(5) Do coax cables test good?	p	q
p. Isolate defective coax cable (table 6, this WP, and A1-F18A()-WDM-000). Do step aa	-	-
q. Do the substeps below:		
(1) Disconnect 74P-F002B from Pulse Decoder KY-651()/ARA-63.		
(2) Disconnect 82P-F001C from Control-Converter C-10382/A.		
(3) On Intercommunication Amplifier-Control AM-6979/A or AM-7360/A, set ILS UFC/MAN switch to UFC.		

Table 2. ARI Needles Give Wrong Indications (Continued)

Procedure	No	Yes
<p>(4) Does continuity exist from:</p> <p>74P-F002B pin 12 to 82P-F001C pin 28</p> <p>74P-F002B pin 9 to 82P-F001C pin 26</p> <p>74P-F002B pin 8 to 82P-F001C pin 27?</p>	r	t
<p>r. Do the substeps below:</p> <p>(1) Remove Intercommunication Amplifier-Control AM-6979/A or AM-7360/A (A1-F18AC-600-300, WP012 00).</p> <p>(2) Does continuity exist from:</p> <p>J1 pin 125 to J1 pin 101</p> <p>J1 pin 126 to J1 pin 51</p> <p>J1 pin 127 to J1 pin 50?</p>	s	d
<p>s. Replace Intercommunication Amplifier-Control AM-6979/A or AM-7360/A (A1-F18AC-600-300, WP012 00). Do step aa</p>	-	-
<p>t. Do the substeps below:</p> <p>(1) Disconnect 74P-B001A from Radio Receiver R-1379()/ARA-63.</p> <p>(2) Open door 14R (A1-F18AC-LMM-010). Disconnect 52P-F058E from no. 2 relay panel assembly.</p> <p>(3) Does continuity exist from:</p> <p>74P-B001A pin 16 to 52P-F058E pin 88</p> <p>52P-F058E pin 67 to aircraft ground?</p>	d	u
<p>u. Isolate between no. 2 relay panel assembly wiring and 74K-F010 (A1-F18AC-420-300, WP032 00). Do step aa</p>	-	-
<p>v. Is fault indicator latched on Radio Receiver R-1379()/ARA-63?</p>	y	w
<p>w. Do the substeps below:</p> <p>(1) Disconnect 74P-F002B from Pulse Decoder KY-651()/ARA-63.</p> <p>(2) Open door 14R (A1-F18AC-LMM-010). Disconnect 52P-F058E from no. 2 relay panel assembly.</p> <p>(3) Does continuity exist from 52P-F058E pin 88 to 74P-F002B pin 13?</p>	d	x
<p>x. Replace Radio Receiver R-1379()/ARA-63 (A1-F18AC-630-300, WP003 00). Do step aa</p>	-	-

Table 2. ARI Needles Give Wrong Indications (Continued)

Procedure	No	Yes
y. Do the substeps below:		
(1) Open door 13R (A1-F18AC-LMM-010). Disconnect 82P-F001C from Control-Converter C-10382/A.		
(2) Open door 14R (A1-F18AC-LMM-010). Disconnect 52P-F058E from no. 2 relay panel assembly.		
(3) Does continuity exist from 82P-F001C pin 24 to 52P-F058E pin 55?	d	z
z. Replace Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00). Do step aa	-	-
aa. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:		
(1) 52P-C057D		
(2) 52P-F058E		
(3) 74P-B001A		
(4) 74P-B001C (Do connector sealing, A1-F18AC-630-300, WP003 00)		
(5) 74P-F002A		
(6) 74P-F002B		
(7) 74P-F002F		
(8) 82P-F001C		
(9) Intercommunication Amplifier-Control AM-6979/A or AM-7360/A		
(10) Door 3		
(11) Door 10L		
(12) Door 13R		
(13) Door 14R	-	-

Table 3. HUD Deviation Bars Give Wrong Indications

Support Equipment Required		
NOTE		
Alternate item type designations or part numbers are listed in parentheses.		
Part Number or Type Designation	Nomenclature	
260-6XLP (AN/USM-311)	Multimeter	
Materials Required		
None		
NOTE		
Instrument Landing System Functional Schematic (A1-F18AC-630-500, WP004 00) may be used when doing this procedure.		
For locator, refer to WP008 00.		
Malfunction is caused by one of the items listed below:		
Aircraft Wiring Control-Converter C-10382/A		
Procedure	No	Yes
<div>CAUTION</div> <p>To prevent damage to low level devices (switches/relay contacts), do not test for continuity with multimeter on the RX 1 scale. Pin to pin tests that do not go through switches/relay contacts may use the RX 1 scale.</p> <p>NOTE</p> <p>The question used in logic tree “Does continuity exist” means to test for the items listed below:</p> <ol style="list-style-type: none">1. Pin to pin test per procedural step.2. Shorts to ground.3. Shorts between surrounding pins on connectors.4. Shorts between shield and conductors.5. Shield continuity.		

Table 3. HUD Deviation Bars Give Wrong Indications (Continued)

Procedure	No	Yes
<p>a. Do the substeps below:</p> <p>(1) Remove electrical power (A1-F18AC-LMM-000).</p> <p>(2) Open door 13R (A1-F18AC-LMM-010).</p> <p>(3) Disconnect 74P-F002A from Pulse Decoder KY-651()/ARA-63.</p> <p>(4) Disconnect 82P-F001A from Control-Converter C-10382/A.</p> <p>(5) Does continuity exist from:</p> <p>74P-F002A pin 36 to 82P-F001A pin 30</p> <p>74P-F002A pin 31 to 82P-F001A pin 31</p> <p>74P-F002A pin 37 to 82P-F001A pin 28</p> <p>74P-F002A pin 32 to 82P-F001A pin 29</p> <p>74P-F002A pin 34 to 82P-F001A pin 26</p> <p>74P-F002A pin 35 to 82P-F001A pin 37</p> <p>74P-F002A pin 33 to 82P-F001A pin 27</p> <p>74P-F002A pin 33 to 82P-F001A pin 38?</p>	b	c
b. Isolate defective aircraft wiring (A1-F18A()-WDM-000). Do step d	-	-
c. Replace Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00). Do step d	-	-
d. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:		
(1) 74P-F002A		
(2) 82P-F001A		
(3) Door 13R	-	-

Table 4. ARI Needles Give Wrong Indications

Support Equipment Required		
NOTE		
Alternate item type designations or part numbers are listed in parentheses.		
Part Number or Type Designation	Nomenclature	
260-6XLP (AN/USM-311)	Multimeter	
Materials Required		
None		
NOTE		
Instrument Landing System Functional Schematic (A1-F18AC-630-500, WP004 00) may be used when doing this procedure.		
For locator, refer to WP008 00.		
Malfunction is caused by one of the items listed below:		
Aircraft Wiring Intercommunication Amplifier-Control AM-6979/A or AM-7360/A		
Procedure	No	Yes
<div>CAUTION</div> <p>To prevent damage to low level devices (switches/relay contacts), do not test for continuity with multimeter on the RX 1 scale. Pin to pin tests that do not go through switches/relay contacts may use the RX 1 scale.</p> <p>NOTE</p> <p>The question used in logic tree “Does continuity exist” means to test for the items listed below:</p> <ol style="list-style-type: none">1. Pin to pin test per procedural step.2. Shorts to ground.3. Shorts between surrounding pins on connectors.4. Shorts between shield and conductors.5. Shield continuity.		

Table 4. ARI Needles Give Wrong Indications (Continued)

Procedure	No	Yes
a. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 14R (A1-F18AC-LMM-010). Disconnect 52P-F058E from no. 2 relay panel assembly.		
(3) Remove Intercommunication Amplifier-Control AM-6979/A or AM-7360/A (A1-F18AC-600-300, WP012 00).		
(4) Does continuity exist from 76P-H009A pin 113 to 52P-F058E pin 74?	b	c
b. Isolate defective aircraft wiring (A1-F18A()-WDM-000). Do step d	-	-
c. Replace Intercommunication Amplifier-Control AM-6979/A or AM-7360/A (A1-F18AC-600-300, WP012 00). Do step d	-	-
d. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:		
(1) 52P-F058E		
(2) Intercommunication Amplifier-Control AM-6979/A or AM-7360/A		
(3) Door 14R	-	-

Table 5. MAN Does Not Appear On Option Displays

Support Equipment Required	
NOTE	
Alternate item type designations or part numbers are listed in parentheses.	
Part Number or Type Designation	Nomenclature
260-6XLP (AN/USM-311)	Multimeter
Materials Required	
None	

Table 5. MAN Does Not Appear On Option Displays (Continued)

NOTE		
<p>Instrument Landing System Functional Schematic (A1-F18AC-630-500, WP004 00) may be used when doing this procedure.</p> <p>For locator, refer to WP008 00.</p> <p>Malfunction is caused by one of the items listed below:</p> <p>Aircraft Wiring Control-Converter C-10382/A Intercommunication Amplifier-Control AM-6979/A or AM-7360/A</p>		
Procedure	No	Yes
<p style="text-align: center;">CAUTION</p> <p>To prevent damage to low level devices (switches/relay contacts), do not test for continuity with multimeter on the RX 1 scale. Pin to pin tests that do not go through switches/relay contacts may use the RX 1 scale.</p> <p style="text-align: center;">NOTE</p> <p>The question used in logic tree “Does continuity exist” means to test for the items listed below:</p> <ol style="list-style-type: none"> 1. Pin to pin test per procedural step. 2. Shorts to ground. 3. Shorts between surrounding pins on connectors. 4. Shorts between shield and conductors. 5. Shield continuity. 		
a. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 13R (A1-F18AC-LMM-010). Disconnect 82P-F001C from Control-Converter C-10382/A.		
(3) Remove Intercommunication Amplifier-Control AM-6979/A or AM-7360/A (A1-F18AC-600-300, WP012 00).		
(4) Does continuity exist from 76P-H009A pin 96 to 82P-F001C pin 14?	b	c
b. Isolate defective aircraft wiring (A1-F18A()-WDM-000). Do step f	-	-
c. Does continuity exist from 76J-H009A pin 95(+) to 76J-H009A 118(-)?	d	e

Table 5. MAN Does Not Appear On Option Displays (Continued)

Procedure	No	Yes
d. Replace Intercommunication Amplifier-Control AM-6979/A or AM-7360/A (A1-F18AC-600-300, WP012 00). Do step f	-	-
e. Replace Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00). Do step f	-	-
f. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:		
(1) 82P-F001C		
(2) Intercommunication Amplifier-Control AM-6979/A or AM-7360/A		
(3) Door 13R	-	-

Table 6. ILS Coax Cable Parameters

Cable Number	Connector	Impedance (Ohm's)	Dielectric Type	Maximum Millirho	Cable Length (Inches)
RA2A RA2B	74P-B001C to 74P-F002F	50 ± 2	PTFE	± 00	227
	74P-B001C to 74P-B008	50 ± 2	PTFE	± 00	89
	74J-B008 to 74P-F002F	50 ± 2	PTFE	± 00	138

ORGANIZATIONAL MAINTENANCE
TESTING AND TROUBLESHOOTING
TESTING - LINE/ANTENNA RETURN LOSS AND INSERTION LOSS SETUP
DATA LINK AND RADAR BEACON SYSTEMS

Reference Material

None

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Record of Applicable Technical Directives

None

Table 1. Initial Setup

Support Equipment Required	
Part Number or Type Designation	Nomenclature
AN/USM 402A(V)1	Swept Frequency Measurement Test Set

Table 1. Initial Setup (Continued)

Materials Required

None

1. Procedure.

- a. Setup the Swept Frequency Measurement Test Set AN/USM-402A(V)1 (USM-402) by doing substeps below:

- (1) Position USM-402 next to unit under test.

NOTE

Do not ground USM-402 to aircraft.

- (2) Connect USM 402 ground cable between unpainted surface of USM-402 and good ground source.
- (3) Attach Radio Frequency Recorder RO-469-(P)/USM-402(V) (recorder) to top of USM-402 using attaching straps.
- (4) Obtain hookup cable W3. Connect W3P2 to 1J2 of USM-402 and W3P1 to 2J1 of recorder.
- (5) On control panel make sure POWER switch is set to OFF.

NOTE

USM-402 operates on 105 to 125vac, 50 to 400 Hz power.

Do not use aircraft's 400 Hz utility Dower as Power source for USM-402

- (6) Connect USM-402 power cable W1 between 1J1 and 105 to 125vac, 50 to 60 Hz power source. If 105 to 125vac, 400 Hz power source is more accessible, use adapter W2 (part of test set) to connect power cable W1 to 400 Hz power source.
- (7) On control panel, set POWER switch to ON.
- (8) On oscilloscope, set LINE switch to ON.
- (9) On sweep oscillator, press POWER pushbutton.

Table 1. Initial Setup (Continued)

CAUTION

Do not connect detectors directly to the high frequency output of the sweep oscillator unless internal leveling (LEVELING INT) is selected on the oscillator unit. The high frequency RF output may be strong enough to damage the detectors in the unleveled mode.


To prevent possible detector damage, touch a ground point before handling detectors to avoid static discharge from the hands through the detector.

- b. Connect USM-402 directional couplers, and detectors to swept amplitude analyzer and oscillator using USM-402 rf cables. Use the applicable rf cables necessary to reach unit under test. Refer to fig 1.

NOTE

Off position of control is indicated by black ring on control being visible.

- c. On the sweep oscillator, set the below controls:

SWEEP TIME (SEC)	0.01
VARIABLE	Midrange
TRIGGER	On (pressed)
MANUAL SWEEP	Full CCW and pushed
RF MARKER	Off
RF AM	Off
RF BLANKING	Off
MARKER AMPL	OFF (full CCW)
Sweep Mode	Select full band by pressing center of control marked FULL BAND
M1	Not used
	Not used
F ₀ FINE	Not used
M2	Not used

- d. On the oscillator unit, set the below controls:

LEVELING	INT
PM (RF OFF)	On (pressed)

NOTE

Sweep frequencies are listed below:

Radar Beacon System - 9.1 to 9.4 GHz
Data Link System - 0.300 to 0.325 GHz

Table 1. Initial Setup (Continued)

e. On the controller, set the below controls:

FREQ RANGE GHz	Select range and frequency scale of interest.
LEVEL CONTROL	Maximum leveled power (turn LEVEL CONTROL maximum CW until UNLEVELED WHEN LIT lamp comes on, then CCW until lamp goes out).

f. On the swept amplitude analyzer, set the below controls:

SMOOTHING	Off (out)
<u>CHANNEL A</u>	
DISPLAY POSITION	Press
OFFSET dB	+00.0
OFFSET CAL	ON
dB/DIV	10

NOTE

CHANNEL B DISPLAY is turned off by slightly pressing one of the CHANNEL B DISPLAY pushbuttons already in the out (off) position. This action releases all push-buttons from their detent position.

CHANNEL B

DISPLAY	Off
OFFSET dB	+00.0
OFFSET CAL	ON
dB/DIV	10

g. On the oscilloscope, set the below controls:

DISPLAY EXT SENS	
INTENSITY	Adjust for visible trace.
FOCUS	Adjust for sharp trace (use FIND BEAM and HORIZONTAL POSITION as necessary).
SCALE	Set so that grid lines (CRT graticules) are visible.
AC/DC	DC
MAGNIFIER	X5

Table 1. Initial Setup (Continued)

HORIZONTAL POSITION DISPLAY	Position left edge of trace on left vertical graticule. Adjust external sensitivity so that trace fills full width of horizontal scale.
h. On swept amplitude analyzer, use CHANNEL A DISPLAY POSITION screwdriver adjustment to set channel A sweep position at the second horizontal graticule from the top of the oscilloscope. (Another graticule may be selected at the option of the operator.) This is the position graticule.	
NOTE	
Channel A display is turned off by slightly pressing one of the CHANNEL A DISPLAY pushbuttons. This releases all pushbuttons from their detent position.	
i. On the swept amplitude analyzer, turn off channel A display and press CHANNEL B DISPLAY POSITION pushbutton.	
NOTE	
Adjustment of oscilloscope controls is not necessary to obtain a channel B trace. If adjustment becomes necessary, this is an indication of a malfunction in the swept amplitude analyzer.	
j. On swept amplitude analyzer, use screwdriver adjustment to set channel B sweep position to the same horizontal graticule used in step h.	

Table 2. Insertion Loss Setup

Support Equipment Required	
Part Number or Type Designation	Nomenclature
AN/USM-402A(V)1	Swept Frequency Measurement Test Set
Materials Required	
None	
1. Procedure.	
a. Use fig 1 to select USM-402 components for insertion loss setup.	

Table 2. Insertion Loss Setup (Continued)

CAUTION

When connecting 7mm adapters to directional couplers, do not tighten both connectors at the same time. Tightening both connectors at the same time may cause an over-tight condition, damaging connector threads.

NOTE

It may not be possible to use the same adapters for the reference line as will be used when connecting to the unit under test. For example, if the unit has a TNC male on one end, and an SC male on the other end, the reference line should be established using an SC male-female pair so that only one adapter will have to be changed to measure insertion loss through the unit under test.

Make sure the directional couplers used for calibration can pass the frequencies required for testing.

b. Connect USM-402 components for calibration per fig 1.

c. On the sweep oscillator, set the below controls:

SWEEP TIME (SEC)	0.01
VARIABLE	Midrange
TRIGGER	INT
MANUAL SWEEP	Full CCW and pushed
RF MARKER	Off
RF AM	Off
RF BLANKING	Off
MARKER AMPL	OFF (full CCW)

NOTE

Sweep frequencies are listed below:

Radar Beacon System - 9.1 to 9.4 GHz
Data Link System - 0.300 to 0.325 GHz

Sweep Mode	M1 M2
M 1	Set at lowest frequency of interest.
D/F	Not used
F _o	Not used
F _o FINE	Not used
M2	Set at highest frequency of interest.

Table 2. Insertion Loss Setup (Continued)

d. On the oscillator unit, set the below controls:

LEVELING	INT
PM (RF OFF)	On (pressed)

NOTE

Sweep frequencies are listed below:

Radar Beacon System - 9.1 to 9.4 GHz

Data Link System - 0.300 to 0.325 GHz

e. On the controller, set the below controls:

NOTE

Off is with black ring visible.

FREQ RANGE GHz	Select range and frequency scale of interest.
LEVEL CONTROL	Maximum leveled power (turn LEVEL CONTROL maximum CW until UNLEVELED WHEN LIT lamp comes on, then CCW until lamp goes out).

f. On the swept amplitude analyzer, set the below controls:

SMOOTHING	Off (out)
<u>CHANNEL A</u>	
DISPLAY	Off (Slightly pressing one of the CHANNEL A DISPLAY pushbuttons will turn off channel A).
<u>CHANNEL B</u>	
DISPLAY	B/R
OFFSET dB	+00.0
OFFSET CAL	ON
dB/DIV	2

g. On the oscilloscope, set the below controls:

AC/DC	DC
MAGNIFIER	X5

h. On swept amplitude analyzer, use the CHANNEL B OFFSET CAL vernier, to position vertically the left edge of the trace on the crt position graticule. The trace now represents the upper reference line.

Table 2. Insertion Loss Setup (Continued)**NOTE**

Do not change CHANNEL B OFFSET CAL vernier setting until the measurement is completed.

- i. Measure the peak-to-peak variation of the reference line. If variation is greater than 2dB, inspect USM-402 hookup for loose connections. Replace USM-402, if no faults are found in hookup.
- j. Do table 4, RECORDER SETUP.

Table 3. Return Loss Setup**Support Equipment Required**

**Part Number or
Type Designation**

Nomenclature

AN/USM-402A(V)1

Swept Frequency
Measurement Test Set

Materials Required

None

1. Procedure.

- a. Use fig 2 to select USM-402 components for return loss setup.



When connecting 7mm adapters to directional couplers, do not tighten both connectors at the same time. Tightening both connectors at the same time may cause an over-tight condition, damaging connector threads.

NOTE

It may not be possible to use the same adapters for the reference line as will be used when connecting to the unit under test. For example, if the unit has a TNC male on one end, and an SC male on the other end, the reference line should be established using an SC male-female pair so that only one adapter will have to be changed to measure return loss through the unit under test.

Make sure the directional couplers used for calibration, can pass the frequencies required for testing.

Table 3. Return Loss Setup (Continued)

b. Connect USM-402 components for calibration per fig 2.

c. On the oscillator, set the below controls:

LEVELING
PM (RF OFF)

INT
On (pressed)

NOTE

Sweep frequencies are listed below:

Radar Beacon System - 9.1 to 9.4 GHz

Data Link System - 0.300 to 0.325 GHz

d. On the controller, set the below controls:

FREQ RANGE GHz
LEVEL CONTROL

Select range and frequency scale of interest.
Maximum leveled power (turn LEVEL CONTROL
maximum CW until UNLEVELED WHEN LIT
lamp comes on, then CCW until lamp goes out).

e. On the sweep oscillator, set the below controls:

NOTE

Off is with black ring visible.

SWEEP TIME (SEC)
VARIABLE
TRIGGER
MANUAL SWEEP
RF MARKER
RF AM
RF BLANKING
MARKER AMPL
Sweep Mode

0.01
Midrange
On (pressed)
Full CCW and pushed
Off
Off
Off
OFF (full CCW)
M1 M2

NOTE

Sweep frequencies are listed below:

Radar Beacon System - 9.1 to 9.4 GHz

Data Link System 0.300 to 0.325 GHz

M1

F_o

Set at lowest frequency of interest.
Not used
Not used

Table 3. Return Loss Setup (Continued)

F _o FINE	Not used
M2	Set at highest frequency of interest.
f. On the swept amplitude analyzer, set the below controls:	
SMOOTHING	Off (out)
<u>CHANNEL A</u>	
DISPLAY	A/R
OFFSET dB	+00.0
OFFSET CAL	ON
dB/DIV	10
<u>CHANNEL B</u>	
DISPLAY	Off (Slightly pressing one of the CHANNEL B DISPLAY pushbuttons will turn off channel B).
g. On the oscilloscope, set the below controls:	
AC/DC	DC
MAGNIFIER	X5
h. On swept amplitude analyzer, use the CHANNEL A OFFSET CAL vernier, position the left edge of the trace on the crt position graticule.	
i. Set the CHANNEL A dB/DIV to 2dB/DIV and again position the left edge of the trace on the crt position graticule using the CHANNEL A OFFSET CAL vernier. The trace now represents the reference line.	
NOTE	
Do not change CHANNEL A OFFSET CAL vernier setting until the measurement is completed.	
j. Measure the peak-to-peak variation of the reference line. If variation is greater than 3dB, inspect USM-402 hookup for loose connectors. Replace USM-402, if no faults are found in hookup.	
k. On swept amplitude analyzer, set CHANNEL A dB/DIV to 5.	
l. Do table 4, RECORDER SETUP.	

Table 4. Recorder Setup

Support Equipment Required	
Part Number or Type Designation	Nomenclature
AN/USM-402A(V)1	Swept Frequency Measurement Test Set
Materials Required	
None	
1. Procedure.	
a. On the recorder, set the below controls:	
POWER	Off (switch light is out)
SERVO	Off
CHART	OFF
PEN	OFF
X module selector switch (left slide switch)	X1
Y module selector switch (middle slide switch)	Y1
SETUP/RECORD switch (right slide switch)	SETUP
X1 RANGE	0.5 VOLTS/INCH
Y1 RANGE	0.5 VOLTS/INCH
b. On the sweep oscillator, set the below controls:	
VARIABLE	CAL
Sweep Mode	M1/M2
NOTE	
Sweep frequencies are listed below:	
Radar Beacon System - 9.1 to 9.4 GHz	
Data Link System - 0.300 to 0.325 GHz	
c. On the controller, set the below controls:	
NOTE	
Select the narrowest spectrum that includes selected range and sweep frequencies.	

Table 4. Recorder Setup (Continued)

FREQ RANGE GHz	Select range and frequency scale of interest.
LEVEL CONTROL	Maximum leveled power (turn LEVEL CONTROL maximum CW until UNLEVELED WHEN LIT lamp comes on, then CCW until lamp goes out).

d. On the swept amplitude analyzer, set the below controls:

CHANNEL A

dB/DIV	5
DISPLAY (for insertion loss)	Off
DISPLAY (for return loss)	A/R

CHANNEL B

dB/DIV	5
DISPLAY (for insertion loss)	B/R
DISPLAY (for return loss)	Off

e. Place disposable fiber tip pen in holder on recorder arm.

f. Set RMT PEN LIFT switch on control panel to OFF.

g. On recorder, press POWER switch to on (switch light comes on).

h. Place graph paper on recorder.

NOTE

The CHART switch activates an electrostatic paper hold-down. Under conditions of high humidity and/or high wind, the electrostatic force may be insufficient and it may be necessary to hold the graph paper with tape.

i. Press recorder CHART switch and use the mechanical hold-down to hold graph paper.

j. On sweep oscillator, select manual sweep mode by pulling MANUAL SWEEP knob to the out position.



To avoid damaging the crt, reduce the crt intensity when manual sweep mode is selected.

k. Adjust oscilloscope INTENSITY CONTROL until initial point of trace is just visible.

Table 4. Recorder Setup (Continued)

- l. On sweep oscillator, set the MANUAL SWEEP knob to the maximum CCW position. A dot should be visible on the left side of the crt position graticule.
- m. On control panel, set RCDR CHAN switch to B for insertion loss, or A for return loss.
- n. On recorder, press SERVO pushbutton switch to on.
- o. Using X and Y ZERO controls, position the recorder pen over the vertical grid line at the left margin one major division (1 inch) from the top of the graph paper grid.
- p. On sweep oscillator, set the MANUAL SWEEP knob to maximum CW position to move pen to right margin.
- q. On recorder, adjust the X VERNIER control to position the recorder pen on the vertical grid line at the right margin.
- r. On sweep oscillator, turn MANUAL SWEEP knob to maximum CCW position. Check that the pen is on the left vertical grid line. Adjust X ZERO control for correct position.
- s. On swept amplitude analyzer, select 5 dB/DIV and dial in +10.0 on the OFFSET dB thumbwheels for the channel being used. The recorder pen moves down two divisions (2 inches) down the graph paper.
- t. On recorder, adjust the Y VERNIER control so that the pen is exactly two major divisions (2 inches) down the graph paper.
- u. Dial in +00.0 on the OFFSET dB thumbwheels for the swept amplitude analyzer channel being used. If the pen does not move back to its original position, one major division from the top of the graph, move the pen to that position using the Y ZERO control, and repeat steps s and t.
- v. On sweep amplitude analyzer, set applicable OFFSET dB thumbwheel switches at +10dB increments, make sure that recorder pen moves down two major divisions for each +10dB of offset dialed in.
- w. Repeat steps r through t until the recorder pen moves down two major divisions for each +2dB of offset dialed in.
- x. Press recorder SERVO switch to off.

Table 5. Recorder Reference Line Recording

Support Equipment Required	
Part Number or Type Designation	Nomenclature
AN/USM-402A(V)1	Swept Frequency Measurement Test Set

Table 5. Recorder Reference Line Recording (Continued)

Materials Required

None

1. Procedure.


- a. On the sweep oscillator, set the below controls:

NOTE

Sweep frequencies are listed below:

Radar Beacon System - 9.1 to 9.4 GHz

Data Link System - 0.300 to 0.325 GHz Off is with black ring visible.

SWEEP TIME (SEC)	0.01
VARIABLE	Midrange
MANUAL SWEEP	Pushed in
RF MARKER	Off
RF AM	Off
RF BLANKING	Off
MARKER AMPL	OFF (fully CCW)
Sweep Mode	M1 M2
M1	Set at lowest frequency of interest.
	Not used
F _o	Not used
F _o FINE	Not used
M2	Set at highest frequency of interest.

- b. On the oscillator unit, set the below controls:

LEVELING	INT
PM (RF OFF)	On (pressed)

- c. On the controller, set the below controls:

NOTE

Sweep frequencies are listed below:

Radar Beacon System - 9.1 to 9.4 GHz

Data Link System - 0.300 to 0.325 GHz

Select the narrowest spectrum that includes selected range and sweep frequencies.

Table 5. Recorder Reference Line Recording (Continued)

FREQ RANGE GHz	Select range and frequency scale of interest
LEVEL CONTROL	Maximum leveled power (turn LEVEL CONTROL maximum CW until UNLEVELED WHEN LIT lamp comes on, then CCW until lamp goes out).

d. On the swept amplitude analyzer, set the below controls:

SMOOTHING	Off (out)
-----------	-----------

CHANNEL A

OFFSET dB	+00.0
OFFSET CAL	ON
DISPLAY (for insertion loss)	Off
DISPLAY (for return loss)	A/R

CHANNEL B

OFFSET dB	+00.0
OFFSET CAL	ON
DISPLAY (for insertion loss)	B/R
DISPLAY (for return loss)	Off

e. For return loss test, on swept amplitude analyzer, set CHANNEL A dB/DIV to 5.

f. For insertion loss test, on swept amplitude analyzer, set CHANNEL B dB/DIV to 5.

g. Place new graph paper on the recorder. Press recorder CHART switch to hold graph paper or use the mechanical holddown if the electrostatic hold-down is not satisfactory.



To avoid damaging the crt, reduce the crt intensity when manual sweep mode is selected.

h. On sweep oscillator, pull MANUAL SWEEP knob to the out position.

i. Rotate the MANUAL SWEEP knob fully CCW.

j. When recording, ensure that the correct channel (A for return loss or B for insertion loss) is selected on the control panel.

k. On recorder, set SETUP/RECORD switch to SETUP.

l. Press recorder SERVO switch to on.

Table 5. Recorder Reference Line Recording (Continued)

- m. Using X and Y ZERO controls, position the recorder pen over the vertical grid line at the left margin one major division (1 inch) from the top of the graph paper grid.
- n. On recorder, press SERVO switch to OFF.
- o. On sweep oscillator, set TRIGGER to EXT and SWEEP TIME (SEC) to 10.

NOTE

Pushing in MANUAL SWEEP knob may start a sweep. Whenever a sweep is started, it can be reset by pushing the sweep oscillator TRIGGER SINGLE sweep pushbutton.

- p. Push MANUAL, SWEEP knob in.
- q. On oscilloscope, adjust INTENSITY control until trace is just visible.
- r. On recorder, press SERVO switch to on and set SETUP/RECORD switch to RECORD.
- s. On control panel, set RMT PEN LIFT switch to ON.
- t. On sweep oscillator, press TRIGGER SINGLE pushbutton to initiate a sweep.
- u. When the recorder arm has reset after completing the sweep, set swept amplitude analyzer OFFSET dB thumbwheel switches to the applicable maximum allowable loss:

System and Test	Maximum Allowable Loss (dB)
Radar Beacon System	
Insertion Loss - 161353 THRU 161528	1.1 dB
Insertion Loss - 161702 AND UP	1.6 dB (maximum)
Return Loss	9.6 dB
Data Link System	
Insertion Loss	0.7 dB

- v. On sweep oscillator, press TRIGGER SINGLE pushbutton.
- w. When the recorder arm has reset after completing the sweep, on swept amplitude analyzer, set OFFSET dB thumbwheel switches to 00.0.
- x. On control panel, set RMT PEN LIFT switch to OFF.

Table 5. Recorder Reference Line Recording (Continued)

- y. On recorder, press SERVO switch to off.
- z. On sweep oscillator, set TRIGGER to INT and SWEEP TIME (SEC) to 0.01.

Table 6. Measurement Recording

Support Equipment Required	
Part Number or Type Designation	Nomenclature
AN/USM-402A(V)1	Swept Frequency Measurement Test Set
Materials Required	
None	
1. Procedure.	
a. Record measurements by doing the substeps below:	
(1) On oscilloscope, adjust INTENSITY control until trace is just visible.	
(2) On sweep oscillator, set TRIGGER to EXT and SWEEP TIME (SEC) to 10.	
(3) When trace is complete, on recorder, press SERVO switch to on.	
(4) On control panel, set RMT PEN LIFT switch to ON.	
(5) On sweep oscillator, press TRIGGER SINGLE pushbutton. Measurement of unit under test is recorded on graph paper.	
NOTE	
When testing a transmission line with low amplitude periodic variation, slow the sweep by setting the VARIABLE knob on the sweep oscillator fully CW.	
(6) After recorder arm has reset, on control panel, set RMT PEN LIFT switch to OFF.	
(7) On recorder, press SERVO switch to off.	

Table 7. Shutdown

Support Equipment Required	
Part Number or Type Designation	Nomenclature
AN/USM-402A(V)1	Swept Frequency Measurement Test Set
Materials Required	
None	
1. Procedure.	
a. If the recorder was used, zero pen assembly by pressing and holding X and Y ZERO CHECK pushbuttons until pen arm is at zero position.	
b. On recorder, press POWER and SERVO pushbuttons to off (pushbutton lamps are out).	
c. Cap disposable pen.	
d. On control panel, set POWER switch to OFF.	
e. Disconnect all rf hookup, power cables and store.	
NOTE	
Make sure all cable connectors and accessories are capped. If caps are not available, extend the threaded sleeve of 7mm connectors to protect the connector interface surface.	
f. Store accessories in the proper drawers.	
g. Remove recorder from top of USM-402 and install cover.	
h. Close all doors and drawers on USM-402 and secure. Fold down writing table.	
i. Cap USM-402 power connector 1J1.	

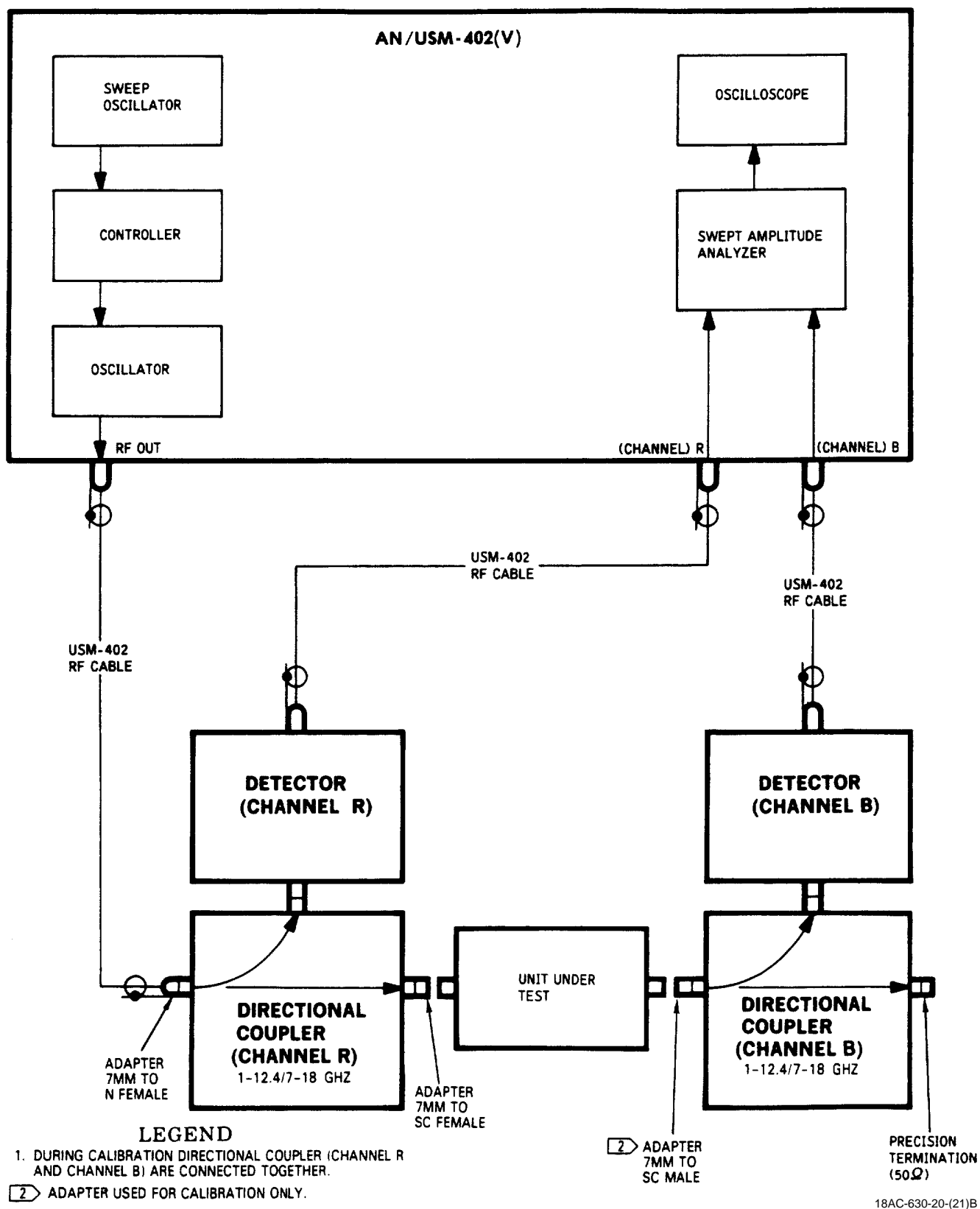


Figure 1. Initial /Insertion Loss Setup

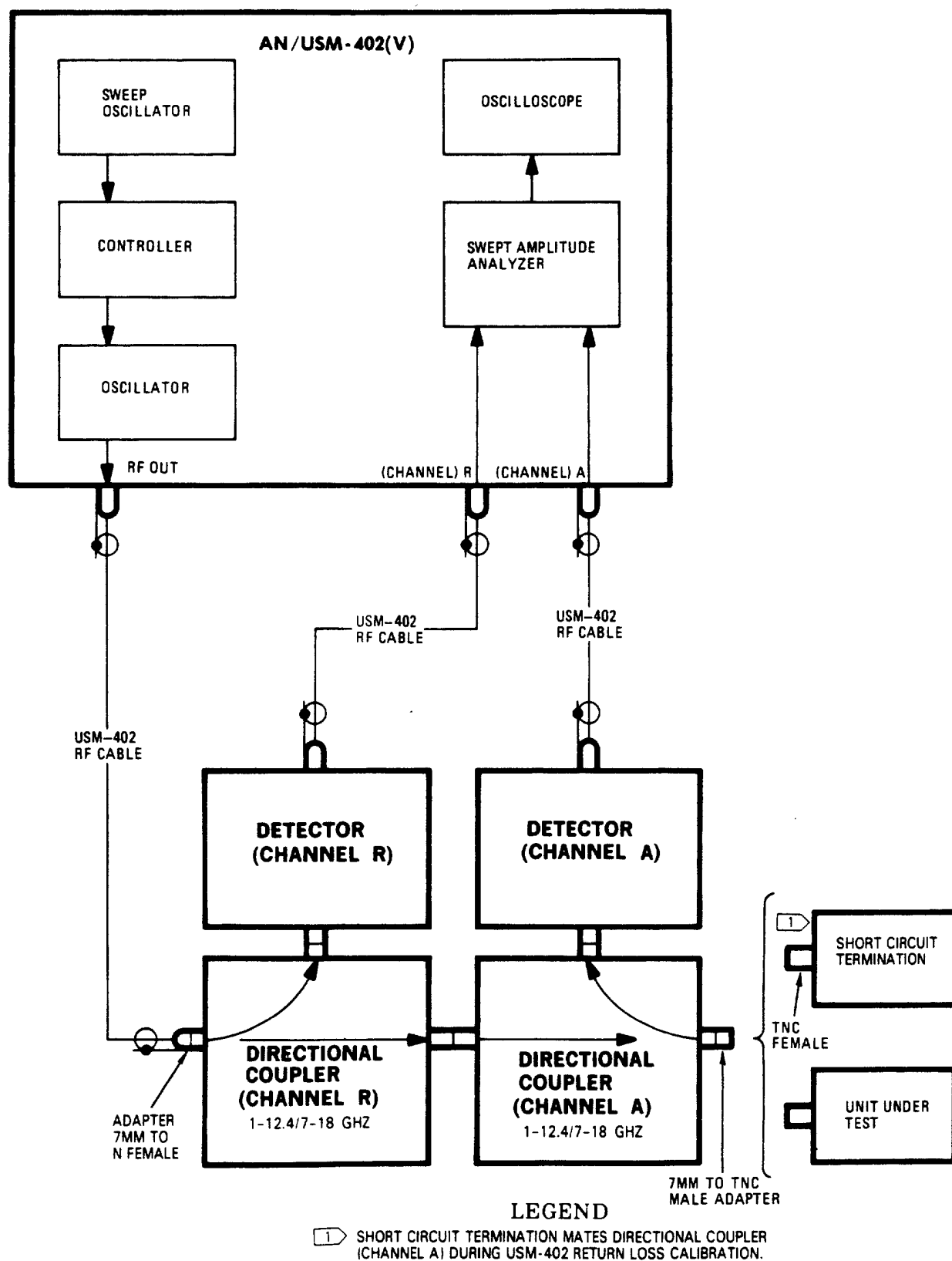


Figure 2. Return Loss Setup

ORGANIZATIONAL MAINTENANCE
TESTING AND TROUBLESHOOTING
TROUBLESHOOTING
INSTRUMENT LANDING SYSTEM

Reference Material

Line Maintenance Procedures	A1-F18AC-LMM-000
Line Maintenance Access Doors	A1-F18AC-LMM-010

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Record of Applicable Technical Directives

None

Table 1. ILS UFC Channelization Selection Inoperative

Support Equipment Required	
NOTE	
Alternate item type designations or part numbers are listed in parentheses.	
Part Number or Type Designation	Nomenclature
260-6XLP (AN/USM-311)	Multimeter

Table 1. ILS UFC Channelization Selection Inoperative (Continued)

Materials Required		
None		
NOTE		
Instrument Landing System Functional Schematic (A1-F18AC-630-500, WP004 00) may be used with this procedure.		
For locator, refer to WP008 00.		
Malfunction is caused by one of the items listed below:		
Aircraft Wiring		
Control-Converter C-10382/A		
Intercommunication Amplifier-Control AM-6979/A or AM-7360/A		
Procedure	No	Yes
<div style="text-align: center;">CAUTION</div> <p>To prevent damage to low level devices (switches/relay contacts), do not test for continuity with multimeter on the RX 1 scale. Pin to pin tests that do not go through switches/relay contacts may use the RX 1 scale.</p> <p style="text-align: center;">NOTE</p> <p>The question used in logic tree “Does continuity exist” means to test for the items listed below:</p> <ol style="list-style-type: none"> 1. Pin to pin test per procedural step. 2. Shorts to ground. 3. Shorts between surrounding pins on connectors. 4. Shorts between shield and conductors. 5. Shield continuity. <p>a. Do substeps below:</p> <ol style="list-style-type: none"> (1) Remove Intercommunication Amplifier-Control AM-6979/A or AM-7360/A (amplifier-control) (A1-F18AC-600-300, WP012 00). (2) Open door 13R (A1-F18AC-LMM-010). (3) Disconnect 82P-F001C from Control-Converter C-10382/A. 		

Table 1. ILS UFC Channelization Selection Inoperative (Continued)

Procedure	No	Yes
<p>(4) Does continuity exist from:</p> <p>82P-F001C pin 26 to 76P-H009A pin 126 82P-F001C pin 27 to 76P-H009A pin 127 82P-F001C pin 28 to 76P-H009A pin 125 82P-F001C pin 29 to 76P-H009A pin 89 82P-F001C pin 30 to 76P-H009A pin 76 82P-F001C pin 31 to 76P-H009A pin 87 82P-F001C pin 32 to 76P-H009A pin 77 82P-F001C pin 33 to 76P-H009A pin 88 82P-F001C pin 34 to 76P-H009A pin 78 82P-F001C pin 35 to 76P-H009A pin 79 82P-F001C pin 36 to 76P-H009A pin 91 82P-F001C pin 37 to 76P-H009A pin 80 82P-F001C pin 38 to 76P-H009A pin 92 82P-F001C pin 39 to 76P-H009A pin 81?</p>	b	c
b. Isolate defective aircraft wiring (A1-F18A()-WDM-000). Do step f	-	-
c. Does continuity exist on amplifier-control from:		
<p>J1 pin 76 to J1 pin 28 J1 pin 87 to J1 pin 29 J1 pin 77 to J1 pin 39 J1 pin 88 to J1 pin 40 J1 pin 78 to J1 pin 41 J1 pin 79 to J1 pin 31 J1 pin 91 to J1 pin 32 J1 pin 80 to J1 pin 33 J1 pin 92 to J1 pin 43 J1 pin 81 to J1 pin 44 J1 pin 89 to J1 pin 30 J1 pin 125 to J1 pin 101 J1 pin 126 to J1 pin 51 J1 pin 127 to J1 pin 50?</p>	d	e
d. Replace Intercommunication Amplifier-Control AM-6979/A or AM-7360/A (A1-F18AC-600-300, WP012 00). Do step f	-	-
e. Replace Control-Converter C-10382/A(A1-F18AC-741-300, W P005 00). Do step f	-	-

Table 1. ILS UFC Channelization Selection Inoperative (Continued)

Procedure	No	Yes
f. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:		
(1) 82P-F001C		
(2) Door 13R (A1-F18AC-LMM-010)		
(3) Intercommunication Amplifier-Control AM-6979/A or AM-7360/A	-	-

Table 2. ILS Channelization Selection Inoperative

Support Equipment Required	
NOTE	
Alternate item type designations or part numbers are listed in parentheses.	
Part Number or Type Designation	Nomenclature
260-6XLP (AN/USM-311)	Multimeter
Materials Required	
None	
NOTE	
Instrument Landing System Functional Schematic (A1-F18AC-630-500, WP004 00) may be used with this procedure.	
For locator, refer to WP008 00.	
Malfunction is caused by one of the items listed below:	
Aircraft Wiring	
Intercommunication Amplifier-Control AM-6979/A or AM-7360/A	
KU-Band Antenna AS-3361/ARA-63	
KU-Band Waveguide Assembly	
Radio Receiver R-1379()/ARA-63	

Table 2. ILS Channelization Selection Inoperative (Continued)


Procedure	No	Yes
<div style="text-align: center;">  <p>To prevent damage to low level devices (switches/relay contacts), do not test for continuity with multimeter on the RX 1 scale. Pin to pin tests that do not go through switches/relay contacts may use the RX 1 scale.</p> <p>NOTE</p> <p>The question used in logic tree “Does continuity exist” means to test for the items listed below:</p> <ol style="list-style-type: none"> 1. Pin to pin test per procedural step. 2. Shorts to ground. 3. Shorts between surrounding pins on connectors. 4. Shorts between shield and conductors. 5. Shield continuity. </div>		
a. Do Instrument Landing System Built-In Test (WP003 00). Does BIT test good?	b	c
b. Do applicable built-in test troubleshooting	-	-
c. Do substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 13R (A1-F18AC-LMM-010).		
(3) Disconnect 82P-F001C from Control-Converter C-10382/A.		
(4) Open door 3 (A1-F18AC-LMM-010).		
(5) Disconnect 74P-B001A from Radio Receiver R-1379()/ARA-63.		
(6) Does continuity exist from:		
82P-F001C pin 29 to 74P-B001A pin 15		
82P-F001C pin 30 to 74P-B001A pin 5		
82P-F001C pin 31 to 74P-B001A pin 6		
82P-F001C pin 32 to 74P-B001A pin 7		
82P-F001C pin 33 to 74P-B001A pin 8		
82P-F001C pin 34 to 74P-B001A pin 9		
82P-F001C pin 35 to 74P-B001A pin 10		
82P-F001C pin 36 to 74P-B001A pin 11		
82P-F001C pin 37 to 74P-B001A pin 12		
82P-F001C pin 38 to 74P-B001A pin 13		
82P-F001C pin 39 to 74P-B001A pin 14?	d	g

Table 2. ILS Channelization Selection Inoperative (Continued)

Procedure	No	Yes
d. Do substeps below:		
(1) Remove Intercommunication Amplifiers M-6979/a or AM-7360/A (A1-F18AC-600-300, WP012 00).		
(2) Does continuity exist from:		
76P-H009A pin 28 to 74P-B001A pin 5		
76P-H009A pin 29 to 74P-B001A pin 6		
76P-H009A pin 30 to 74P-B001A pin 15		
76P-H009A pin 31 to 74P-B001A pin 10		
76P-H009A pin 32 to 74P-B001A pin 11		
76P-H009A pin 33 to 74P-B001A pin 12		
76P-H009A pin 39 to 74P-B001A pin 7		
76P-H009A pin 40 to 74P-B001A pin 8		
76P-H009A pin 41 to 74P-B001A pin 9		
76P-H009A pin 43 to 74P-B001A pin 13		
76P-H009A pin 44 to 74P-B001A pin 14?	e	f
e. Isolate defective aircraft wiring (A1-F18A()-WDM-000). Do step h	-	-
f. Replace Intercommunication Amplifier-Control AM-6979/A or AM-7360/A (A1-F18AC-600-300, WP012 00). Do step h	-	-
g. Malfunction has been isolated to Radio Receiver R-1379()/ARA-63 (A1-F18AC-630-300, WP003 00), KU-Band Antenna AS-3361/ARA-63 (A1-F18AC-630-300, WP005 00), or KU-Band Waveguide Assembly (A1-F18AC-630-300, WP006 00). Do step h	-	-
h. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:		
(1) 74P-B001A		
(2) 82P-F001C		
(3) Door 3 (A1-F18AC-LMM-010)		
(4) Door 13R (A1-F18AC-LMM-010)		
(5) Intercommunication Amplifier-Control AM-6979/A or AM-7360/A	-	-

Table 3. Code 148

Support Equipment Required		
None		
Materials Required		
None		
NOTE		
For component locator, refer to A1-F18AC-630-500, WP003 00.		
Malfunction is caused by one of the items listed below:		
Pulse Decoder KY-651()/ARA-63		
Radio Receiver R-1379()/ARA-63		
Procedure	No	Yes
a. Open door 3 (A1-F18AC-LMM-010). Does Radio Receiver R-1379()/ARA-63 fault indicator indicate failed (white)?	c	b
b. Do substeps below:		
(1) Replace Radio Receiver R-1379()/ARA-63 (A1-F18AC-630-300, WP003 00).		
(2) Open door 13R (A1-F18AC-LMM-010).		
(3) Reset fault indicator on Pulse Decoder KY-651()/ARA-63 by turning fault indicator clockwise until indicator is black and white.		
(4) Do step d	-	-
c. Replace Pulse Decoder KY-651()/ARA-63 (A1-F18AC-630-300, WP004 00) and do step d	-	-
d. If disconnected, removed, or opened during this procedure, make sure the items listed below are connected, installed, or closed:		
(1) Door 3		
(2) Door 13R		

ORGANIZATIONAL MAINTENANCE
TESTING AND TROUBLESHOOTING
LOCATOR
INSTRUMENT LANDING SYSTEM

Reference Material

None

Alphabetical Index

Subject

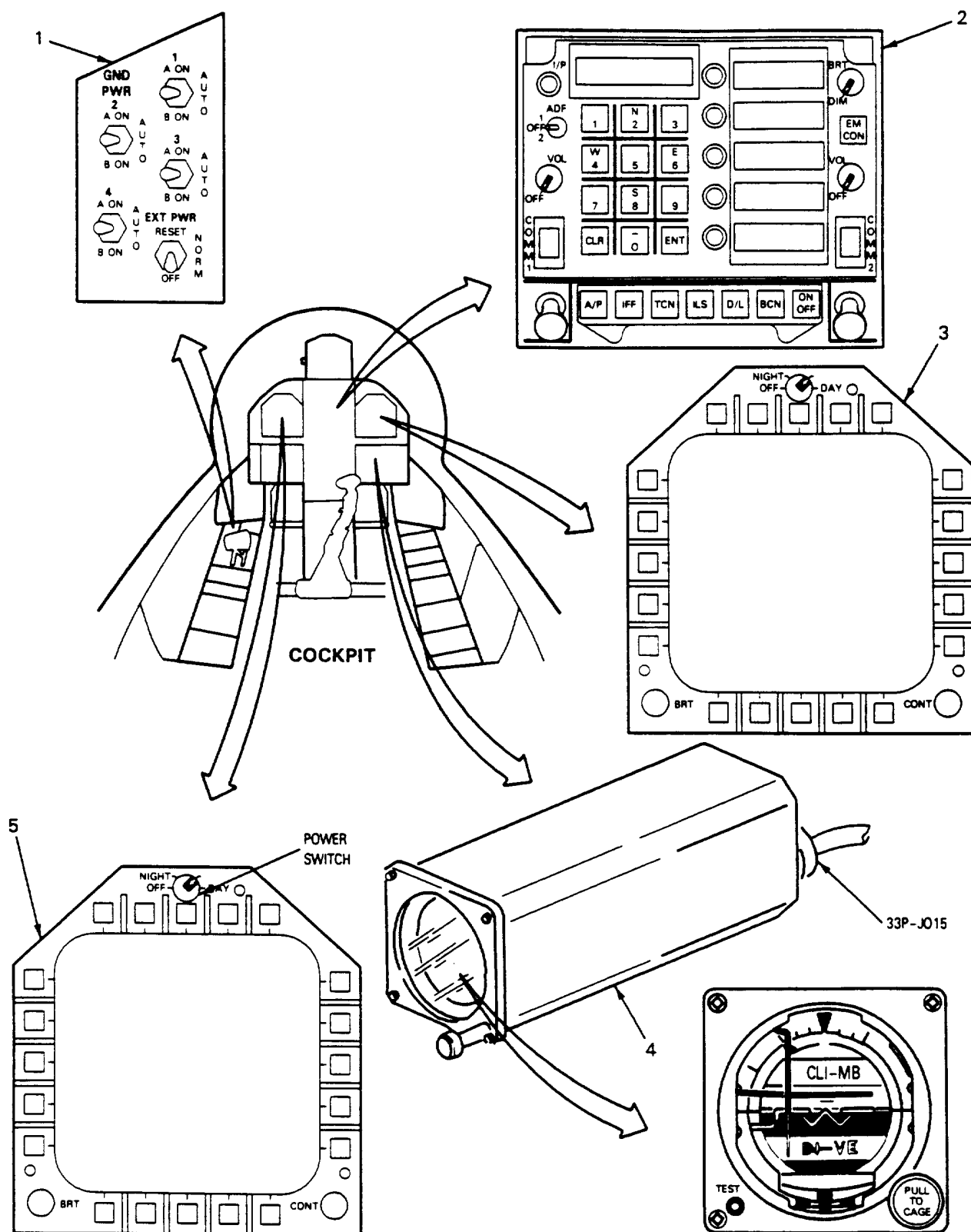
Page No.

Instrument Landing System Locator, Figure 1

2

Record of Applicable Technical Directives

None



18AC-630-20-(1-1)13-CAT1

Figure 1. Instrument Landing System Locator (Sheet 1)

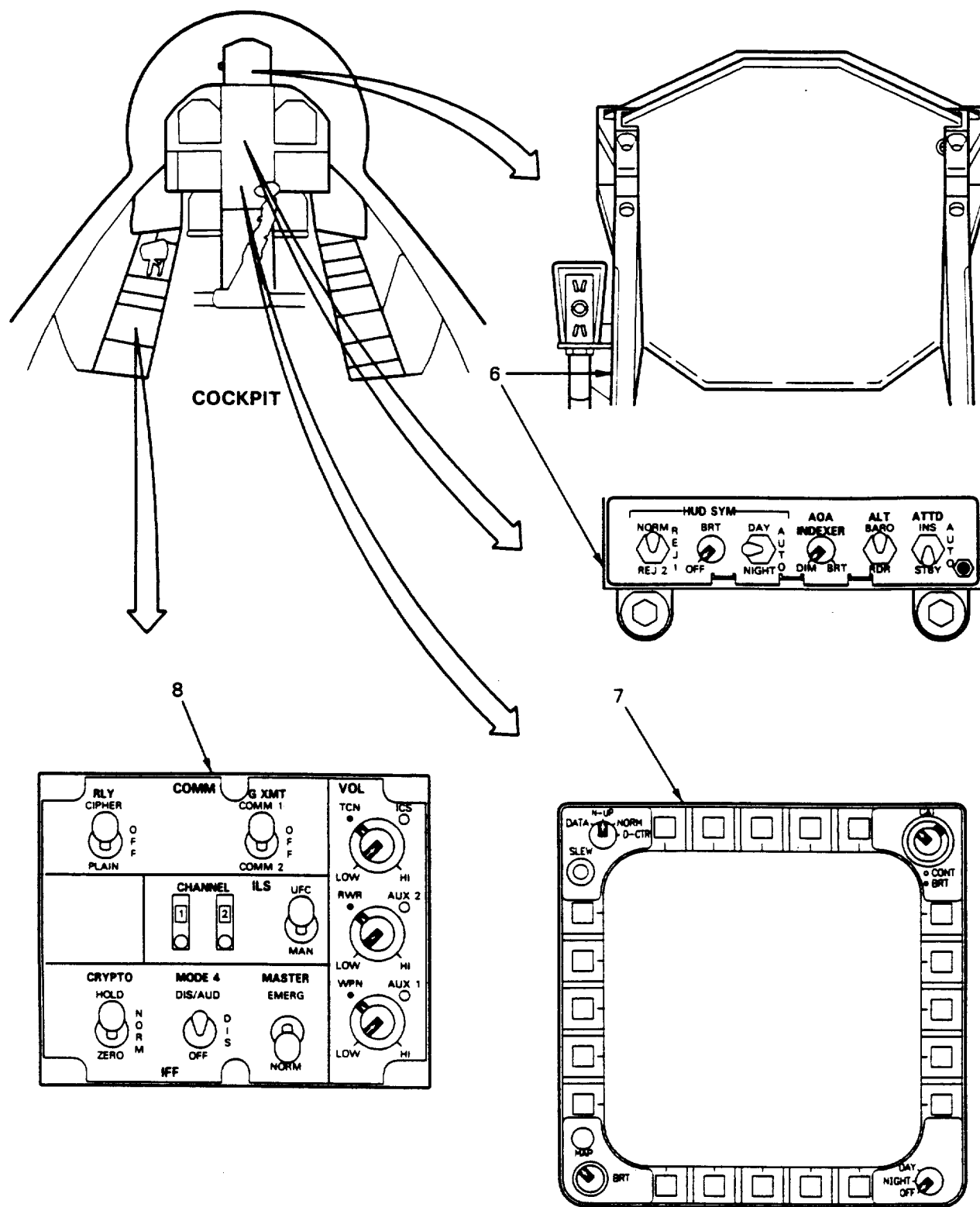
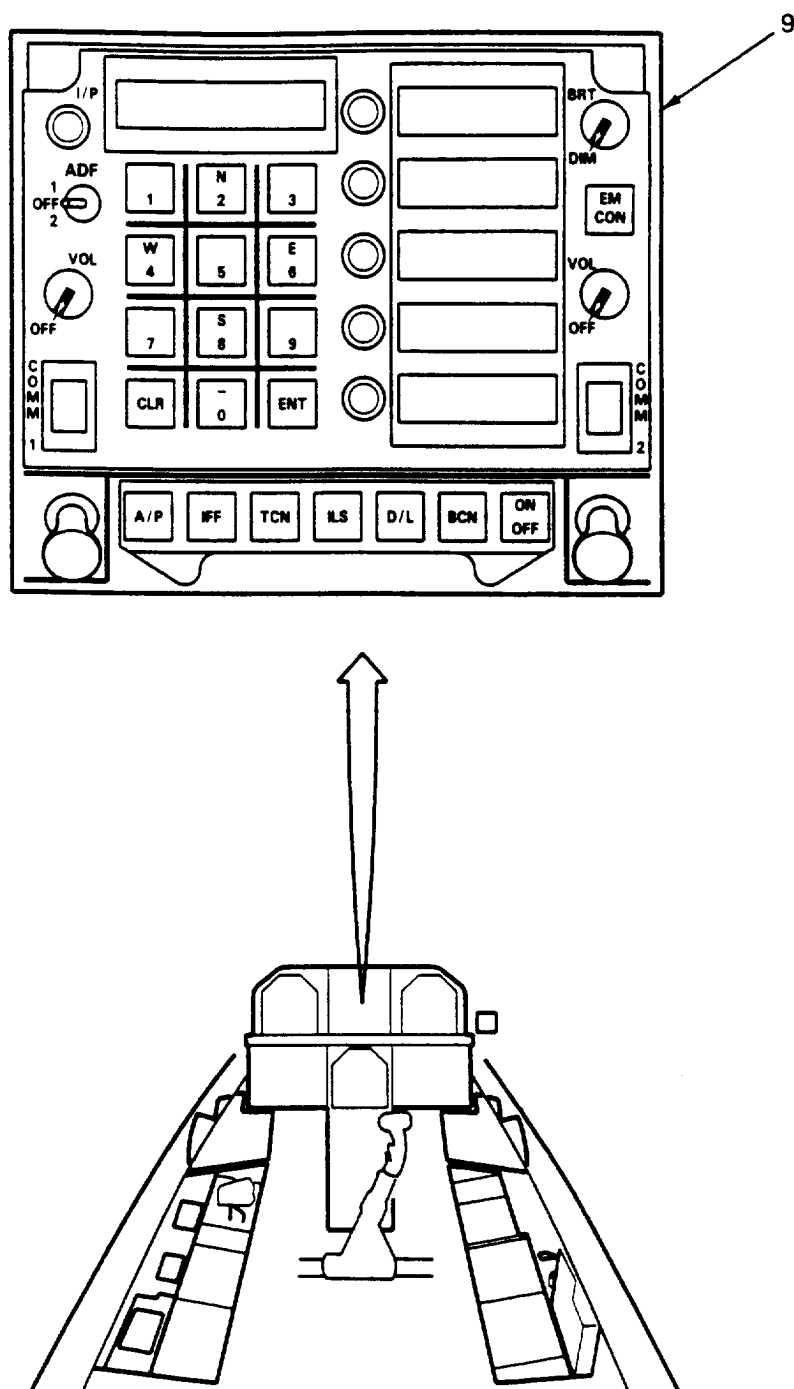
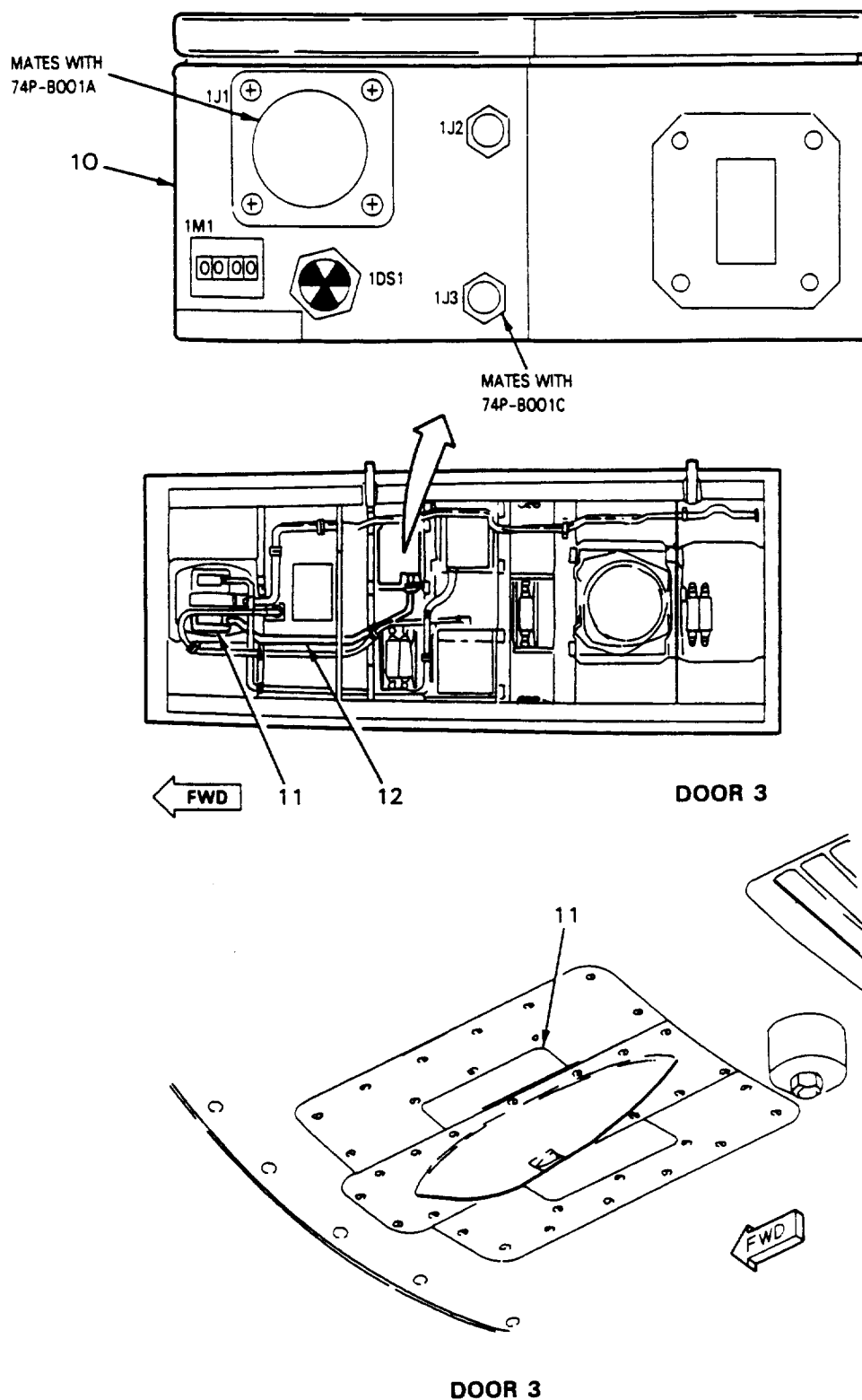


Figure 1. Instrument Landing System Locator (Sheet 2)



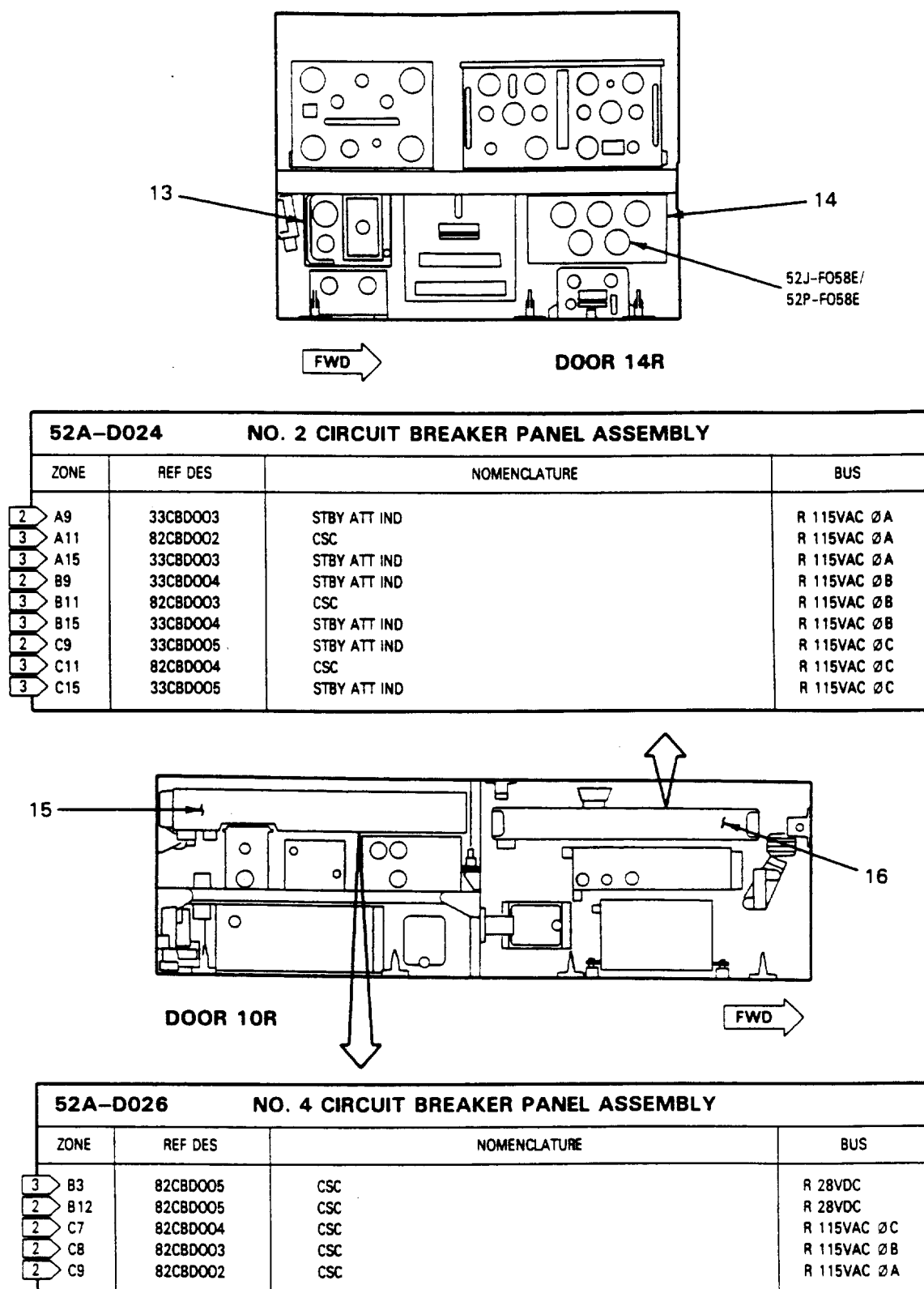
REAR COCKPIT

Figure 1. Instrument Landing System Locator (Sheet 3)



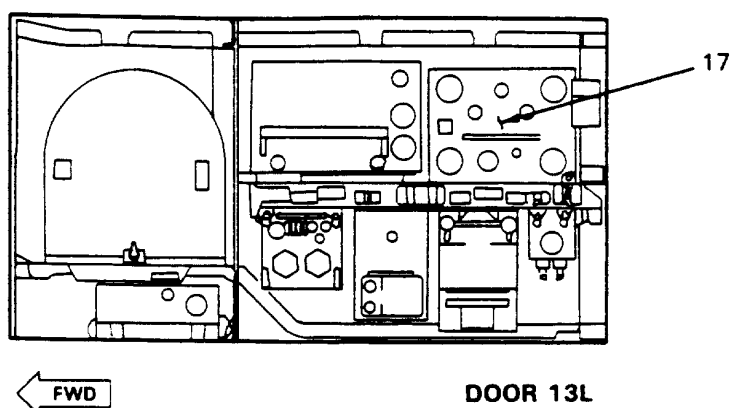
18AC-630-20-(1-4)13-SCAN

Figure 1. Instrument Landing System Locator (Sheet 4)

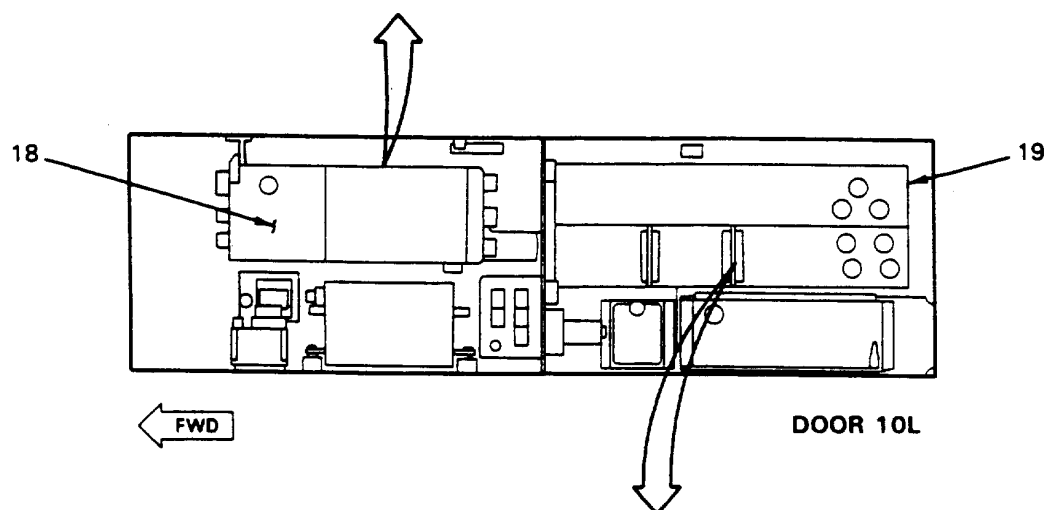


18AC-630-20-(1-5)13--CATI

Figure 1. Instrument Landing System Locator (Sheet 5)



52A-C159 NO. 8 CIRCUIT BREAKER/RELAY PANEL ASSEMBLY			
ZONE	REF DES	NOMENCLATURE	PURPOSE
D2	85C8C004	MSDRS	MAINT 24/28VDC
D12	80C8C006	MMD	L 115VAC Ø C
E12	80C8C005	MMD	L 115VAC Ø B
F12	80C8C004	MMD	L 115VAC Ø A



52A-C057 NO. 7 CIRCUIT BREAKER/RELAY PANEL ASSEMBLY			
ZONE	REF DES	NOMENCLATURE	PURPOSE
A7	74C8C006	ILS	L 28VDC
A15	74C8C003	ILS	L 115VAC Ø A
A20	83C8C006	MISSION COMP NO. 1	L 115VAC Ø A
B15	74C8C004	ILS	L 115VAC Ø B
B20	83C8C007	MISSION COMP NO. 1	L 115VAC Ø B
C15	74C8C005	ILS	L 115VAC Ø C
C20	83C8C008	MISSION COMP NO. 1	L 115VAC Ø C

18AC-630-20-(1-6)13-CATI

Figure 1. Instrument Landing System Locator (Sheet 6)

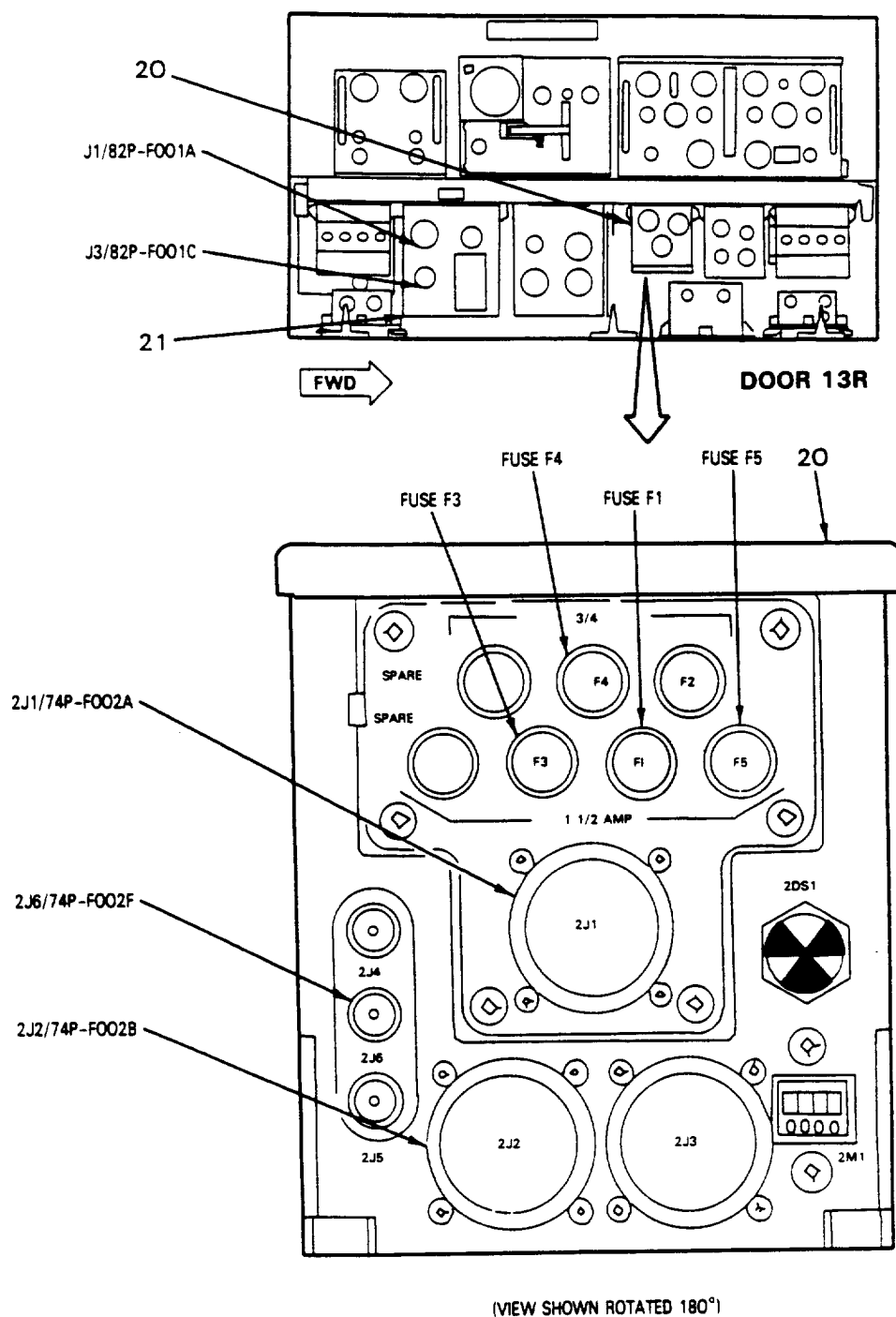


Figure 1. Instrument Landing System Locator (Sheet 7)

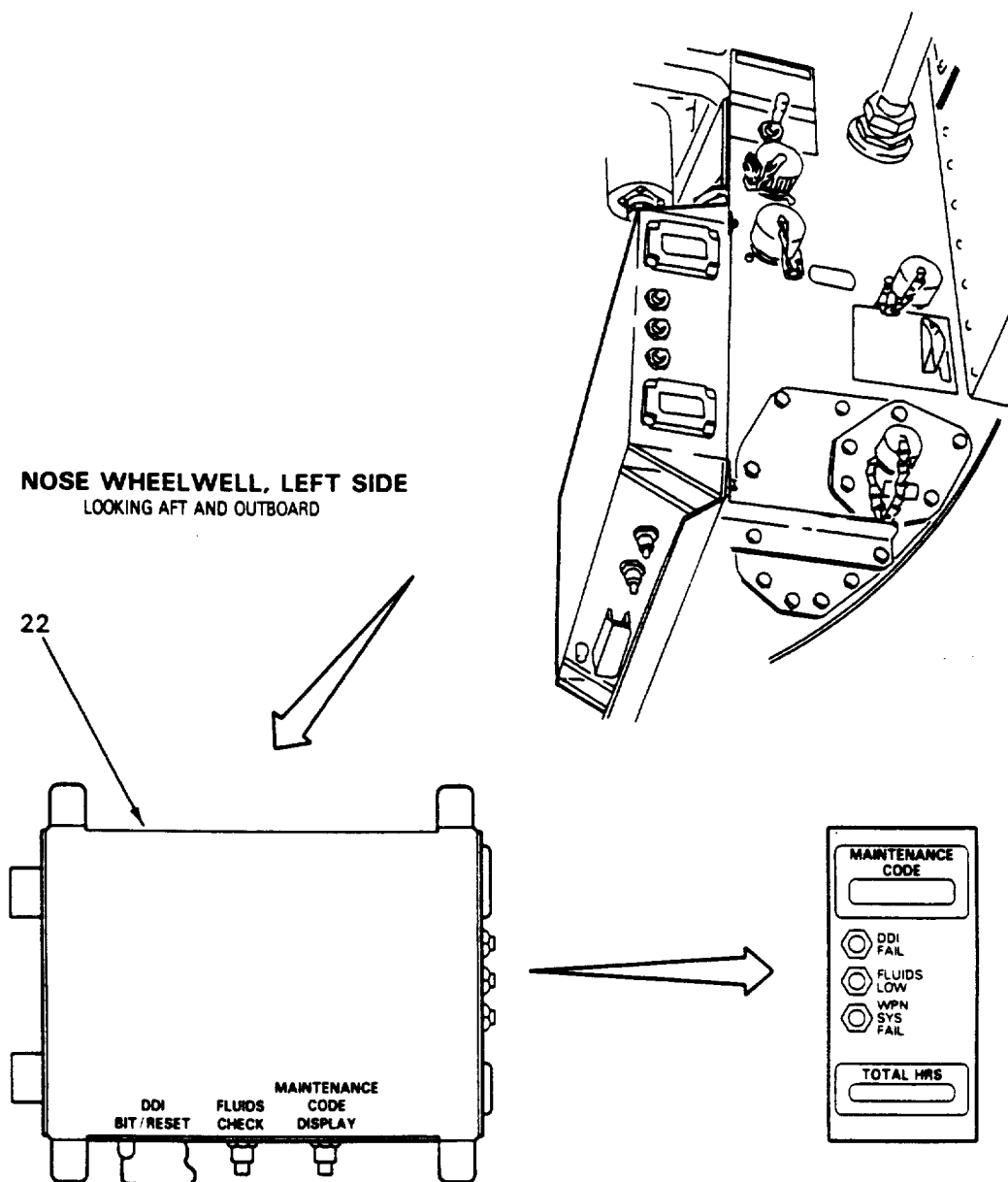


Figure 1. Instrument Landing System Locator (Sheet 8)

Nomenclature	Index No.	Ref Des
ATTITUDE REFERENCE INDICATOR ARU-48/A	4	33M-J015
CONTROL-CONVERTER C-10382/A	21	82A-F001
DIGITAL DATA COMPUTER NO. 1	17	83A-E001
DIGITAL DISPLAY INDICATOR ID-2150/ASM-612	22	85A-G003
ELECTRONIC EQUIPMENT CONTROL C-10380/ASQ	2	79A-J006
GND PWR CONTROL PANEL ASSEMBLY	1	1A-H004
HEAD-UP DISPLAY UNIT AN/AVQ-28	6	79A-J001
HORIZONTAL INDICATOR IP-1350/A	7	80A-J003
INTERCOMMUNICATION AMPLIFIER-CONTROL AM-6979/A OR AM-7360/A	8	76A-H009
KU-BAND ANTENNA AS-3361/ARA-63	11	74E-A011
KU-BAND WAVEGUIDE ASSEMBLY	12	74W-B501
LEFT DIGITAL DISPLAY INDICATOR IP-1317/A	5	80A-H001
NO. 2 CIRCUIT BREAKER PANEL ASSEMBLY	16	52A-D024
NO. 2 RELAY PANEL ASSEMBLY	14	52A-F058
NO. 4 CIRCUIT BREAKER PANEL ASSEMBLY	15	52A-D026
NO. 7 CIRCUIT BREAKER/RELAY PANEL ASSEMBLY	19	52A-C057
NO. 8 CIRCUIT BREAKER/RELAY PANEL ASSEMBLY	18	52A-C159
PULSE DECODER KY-651()/ARA-63	20	74A-F002
RADIO RECEIVER R-1379()/ARA-63	10	74REB001
REAR ELECTRONIC EQUIPMENT CONTROL C -10380/ASQ	9	76A-L028

Figure 1. Instrument Landing System Locator (Sheet 9)

Nomenclature	Index No.	Ref Des
RIGHT DIGITAL DISPLAY INDICATOR IP-1317/A	3	80A-J002
SIGNAL DATA RECORDER RO-508/ASM-612	13	85A-F001
LEGEND		
1. AIRCRAFT DOOR LOCATIONS ARE SHOWN IN A1-F18A()-WDM-000.		
2 161353 THRU 161359		
3 161360 AND UP		

Figure 1. Instrument Landing System Locator (Sheet 10)

ORGANIZATIONAL MAINTENANCE
TESTING AND TROUBLESHOOTING
TESTING - BUILT-IN TEST
RADAR BEACON SYSTEM

Reference Material

Line Maintenance Procedures A1-F18AC-LMM-000
Data Link, Instrument Landing, and Radar Beacon Systems A1-F18AC-630-200
Radar Beacon System Locator WP013 00

Alphabetical Index

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Cockpit Displays, Figure 1	6
Radar Beacon System BIT Test, Table 1	1

Record of Applicable Technical Directives

None

Table 1. Radar Beacon System Built-In Test

Procedure	Normal Indication	Remedy for Abnormal Indication
System Required Components		
Radar Receiver R-1623/APN Radar Receiver-Transmitter RT-1028/APN-202		

Table 1. Radar Beacon System Built-In Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p align="center">Related Systems Required</p> <p>Avionics Cooling System Electrical System Maintenance Status Display and Recording System Mission Computer System Multipurpose Display Group</p> <p align="center">Support Equipment Required</p> <p align="center">None</p> <p align="center">Materials Required</p> <p align="center">None</p> <p align="center">NOTE</p> <p>For locator, refer to WP013 00.</p> <p>If a malfunction occurs during this test, make sure circuit breakers shown in WP013 00 are closed.</p>		
1. PRELIMINARY		
a. Observe Digital Display Indicator ID-2150/ASM-612 in nose wheelwell.	WPN SYS FAIL indicator is black (not latched).	If latched, do built-in test/reset procedure (A1-F18AC-LMM-000).
b. Apply electrical power (A1-F18AC-LMM-000).		
c. On GND PWR control panel assembly, set and hold 1 and 2 switches to B ON. for 3 seconds.	Switches remain on (latched).	<p>1. If switches unlatch in 10 to 30 seconds, apply external cooling air to aircraft (A1-F18AC-LMM-000).</p> <p>2. If switches will not remain on, troubleshoot (A1-F18AC-FIM-000, WP012 00).</p>

Table 1. Radar Beacon System Built-In Test (Continued)

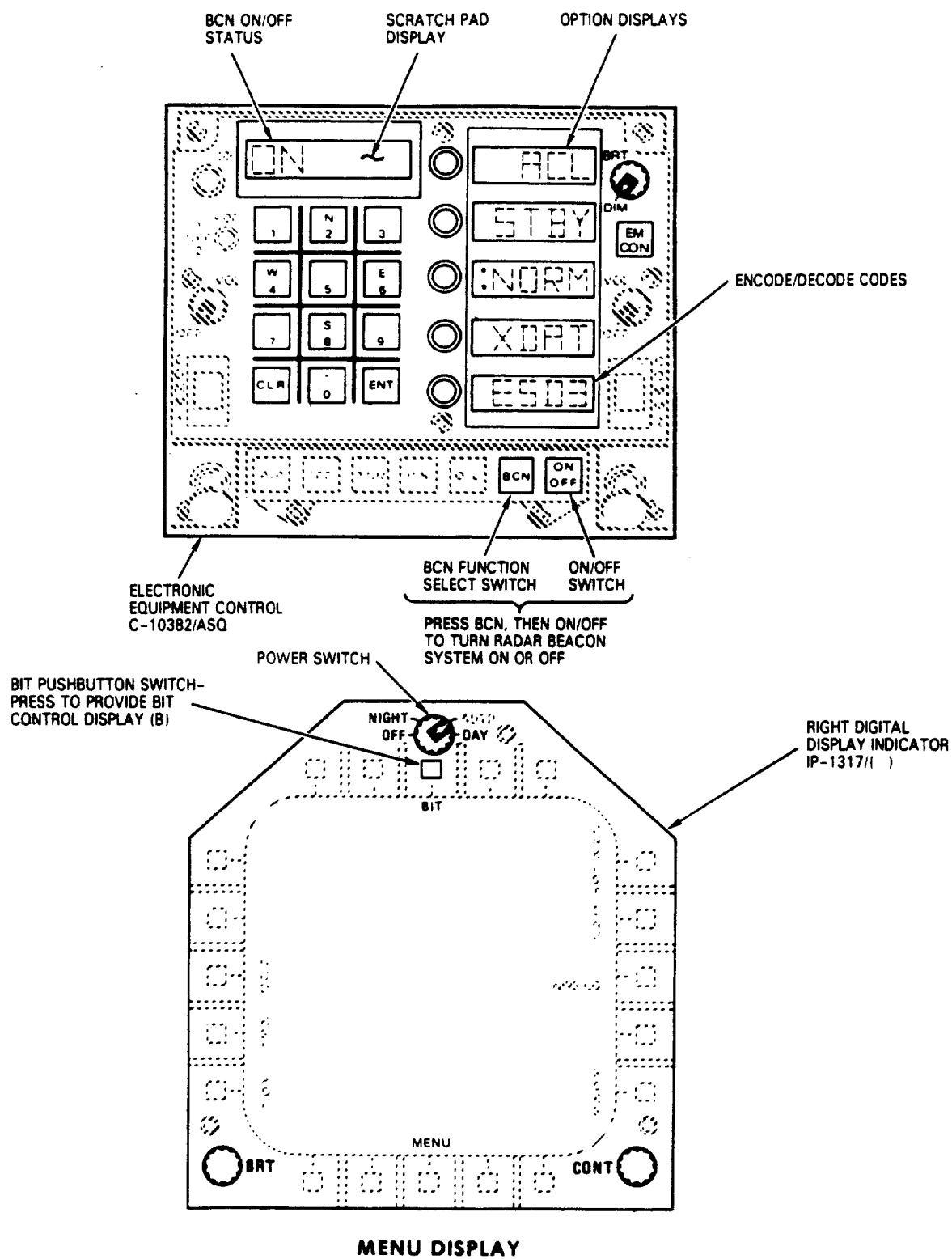
Procedure	Normal Indication	Remedy for Abnormal Indication
<p>d. On left and right Digital Display Indicators IP-1317() (LDDI and RDDI), set power switches to DAY or NIGHT and allow 2 minute warmup. Adjust BRT and CONT controls for best display.</p>	<p>1. LDDI and RDDI have displays and center pushbutton switch on bottom row is labeled MENU (fig 1, detail A).</p>	<p>1. No display on LDDI, F/A-18A, do table 1 (A1-F18AC-745-200, WP006 00). F/A-18B, do table 1 (A1-F18AC-745-200, WP007 00).</p> <p>2. No display on RDDI, F/A-18A, do table 2 (A1-F18AC-745-200, WP006 00). F/A-18B, do table 2 (A1-F18AC-745-200, WP007 00).</p> <p>3. If STANDBY is displayed, F/A-18A, do table 2 (A1-F18AC-745-200, WP004 00). F/A-18B, do table 2 (A1-F18AC-746-200, WP005 00).</p> <p>4. If BRT or CONT controls do not affect display, replace left or right Digital Display Indicator IP-1317() (A1-F18AC-745-300, WP004 00).</p>
<p>2. PROCEDURE.</p>	<p>2. LDDI has cautions and advisory display.</p>	<p>Replace left Digital Display Indicator IP-1317() (A1-F18AC-741-300, WP004 00).</p>
<p>a. On Electronic Equipment Control C-10380/ASQ (equipment control), press BCN function select switch.</p>	<p>1. BCN options are displayed (fig 1).</p> <p>2. A colon appears next to last mode selected (fig 1).</p> <p>3. Last encode and decode codes selected are displayed in last option display (fig 1).</p> <p>4. Scratch pad display is blank (fig 1).</p>	<p>Do Electronic Equipment Equipment Control C-10380/ASQ Lamp and Switch Test (A1-F18AC-741-200, WP004 00).</p>

Table 1. Radar Beacon System Built-In Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
b. On equipment control, press ON/OFF switch and allow 30 second warm-up.	ON is displayed on scratch pad display (fig 1).	Do Electronic Equipment Control C-10380/ASQ Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
c. On RDDI, press MENU pushbutton switch.	RDDI has menu display (fig 1).	Replace right Digital Display Indicator IP-1317() (A1-F18AC-745-300, WP004 00).
d. On RDDI, press BIT pushbutton switch.	RDDI has BIT control display (fig 1, detail B).	Replace right Digital Display Indicator IP-1317() (A1-F18AC-745-300, WP004 00).
e. On RDDI, press ILS/AUG/BCN/D/L pushbutton switch.	1. BCN BIT status displays IN TEST, then GO.	1. If DEGD displayed, do table 1 (WP010 00). 2. If NOT RDY displayed, replace Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00). 3. If RESTRT displayed, press ILS//D/L pushbutton switch. If RESTRT is still displayed, AUG/BCN replace Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00).
	2. AUG BIT status displays IN TEST, then GO.	1. If DEGD displayed, do table 2 (WP010 00). 2. If NOT RDY displayed, replace Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00). 3. If RESTRT displayed, press ILS/AUG/BCN/D/L pushbutton switch. If RESTRT is still displayed, replace Control-Converter C10382/A (A1-F18AC-741-300, WP005 00).

Table 1. Radar Beacon System Built-In Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>f. On equipment control, press BCN function select switch, then ON/OFF switch.</p> <p>3. FINAL.</p> <p>a. On left and right digital display indicators, set power switches to OFF.</p> <p>b. Remove electrical power (A1-F18AC-LMM-000).</p> <p>c. Observe Digital Display Indicator ID-2150/ASM-612 in nose wheelwell.</p>	<p>WPN SYS FAIL indicator is black (not latched).</p>	<p>Read, record, and then reset maintenance codes (A1-F18AC-LMM-000). If code 004 exists, replace Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00).</p>



A

Figure 1. Cockpit Displays (Sheet 1)

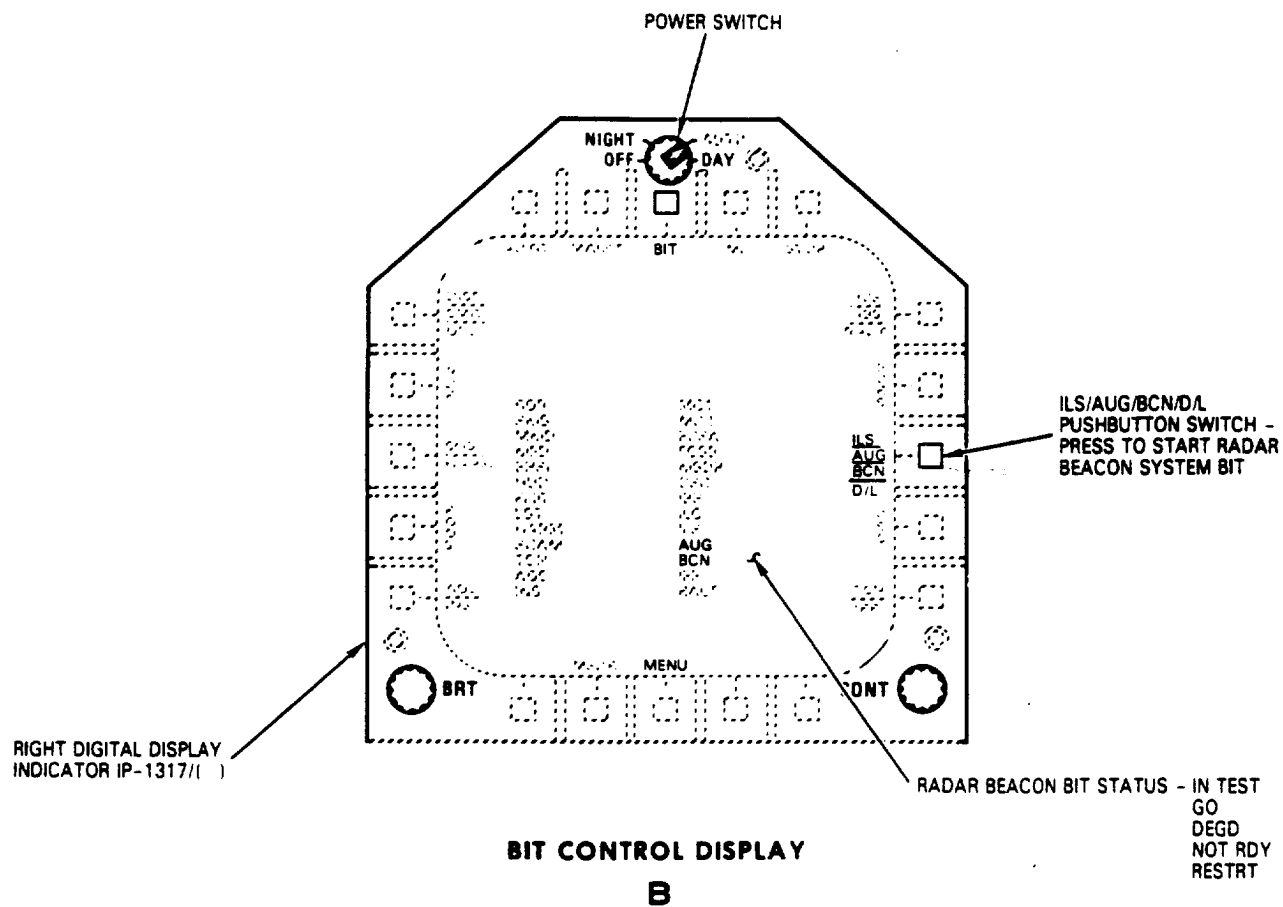


Figure 1. Cockpit Displays (Sheet 2)

ORGANIZATIONAL MAINTENANCE
TESTING AND TROUBLESHOOTING
TROUBLESHOOTING - BUILT-IN TEST
RADAR BEACON SYSTEM

Reference Material

Line Maintenance Procedures	A1-F18AC-LMM-000
Line Maintenance Access Doors	A1-F18AC-LMM-010

Alphabetical Index

Subject	Page No.
Table 1	1
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Record of Applicable Technical Directives

None

Table 1. BCN BIT Status Displays DEGD

Support Equipment Required	
NOTE	
Alternate item type designations or part numbers are listed in parentheses.	
Part Number or Type Designation	Nomenclature
260-6XLP (AN/USM-311)	Multimeter

Table 1. BCN BIT Status Displays DEGD (Continued)

Materials Required		
None		
NOTE		
Radar Beacon System Functional Schematic (A1-F18AC-630-500, WP006 00) may be used with this procedure.		
For locator, refer to WP013 00.		
Malfunction is caused by one of the items listed below:		
Aircraft Wiring Control-Converter C-10382/A No. 2 Relay Panel Assembly No. 4 Circuit Breaker Panel Assembly Radar Receiver-Transmitter RT-1028/APN-202 Relay 72K-F005		
Procedure	No	Yes
<div style="text-align: center;">CAUTION</div> <p>To prevent damage to low level devices (switches/relay contacts), do not test for continuity with multimeter on the RX 1 scale. Pin to pin tests that do not go through switches/relay contacts may use the RX 1 scale.</p> <p style="text-align: center;">NOTE</p> <p>The question used in logic tree “Does continuity exist” means to test for the items listed below:</p> <ol style="list-style-type: none"> 1. Pin to pin test per procedural step. 2. Shorts to ground. 3. Shorts between surrounding pins on connectors. 4. Shorts between shield and conductors. 5. Shield continuity. 		
a. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 3 (A1-F18AC-LMM-010).		
(3) Observe BIT indicator on Radar Receiver-Transmitter RT-1028/APN-202.		
(4) Is BIT indicator latched?	c	b

Table 1. BCN BIT Status Displays DEGD (Continued)

Procedure	No	Yes
b. Replace Radar Receiver-Transmitter RT-1028/APN-202 (A1-F18AC-630-300, WP008 00). Do step o	-	-
c. Do the substeps below:		
(1) Disconnect 72P-A002B from Radar Receiver-Transmitter RT-1028/APN-202.		
(2) Apply electrical power (A1-F18AC-LMM-000).		
(3) On GND PWR control panel assembly, set and hold 2 switch to B ON for 3 seconds.		
(4) On Electronic Equipment Control C-10380/ASQ, press BCN, then ON/OFF switch.		
(5) Does 28vdc exist from 72P-A002B pin F (positive) to 72P-A002B pin P (ground)?	g	d
d. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 13R (A1-F18AC-LMM-010).		
(3) Disconnect 82P-F001C for Control-Converter C-10382/A.		
(4) Does continuity exist from:		
72P-A002B pin C to 82P-F001C pin 96		
72P-A002B pin N to 82P-F001C pin 97		
72P-A002B pin L to 82P-F001C pin 98		
72P-A002B pin M to 82P-F001C pin 99		
72P-A002B pin E to 82P-F001C pin 100?	e	f
e. Isolate defective aircraft wiring (A1-F18A()-WDM-000). Do step o	-	-
f. Malfunction has been isolated to Radar Receiver-Transmitter RT-1028/APN-202 (A1-F18AC-630-300, WP008 00) or Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00). Do step o	-	-
g. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 14R (A1-F18AC-LMM-010). Disconnect 52P-F058E from no. 2 relay panel assembly.		
(3) Does continuity exist from 72P-A002B pin F to 52P-F058E pin 40?	e	h

Table 1. BCN BIT Status Displays DEGD (Continued)

Procedure	No	Yes
h. Apply electrical power (A1-F18AC-LMM-000). Does 28vdc exist from 52P-F058E pin 51 (positive) to 52P-F058E pin 61 (ground)?	i	k
i. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 10R (A1-F18AC-LMM-010).		
(3) On 161353 THRU 161359, disconnect 52P-D026D, or on 161360 AND UP, disconnect 52P-D026A from no. 4 circuit breaker panel assembly.		
(4) Does continuity exist from:		
161353 THRU 161359		
52P-F058E pin 51 to 52P-D026D pin 28?	e	j
161360 AND UP		
52P-F058E pin 51 to 52P-D026A pin 28?	e	j
j. Isolate between no. 4 circuit breaker panel assembly wiring and 72CBD007 (A1-F18AC-420-300, WP025 00). Do step o	-	-
k. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Connect 72P-A002B.		
(3) Open door 13R (A1-F18AC-LMM-010). Disconnect 82P-F001C from Control-Converter C-10382/A.		
(4) Does continuity exist from 52P-F058E pin 41 to 82P-F001C pin 107?	e	l
l. Do the substeps below:		
(1) Remove relay 72K-F005 (A1-F18AC-420-300, WP032 00).		
(2) Does continuity exist from relay socket 72K-F005:		
pin A1 to 52J-F058E pin 40		
pin A2 to 52J-F058E pin 51		
pin X1 to 52J-F058E pin 51		
pin X2 to 52J-F058E pin 41?	m	n
m. Malfunction has been isolated to no. 2 relay panel assembly wiring (A1-F18AC-420-300, WP032 00). Do step o	-	-

Table 1. BCN BIT Status Displays DEGD (Continued)

Procedure	No	Yes
n. Malfunction has been isolated to relay 72K-F005 (A1-F18AC-420-300, WP032 00), or to Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00). Do step o	-	-
o. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:		
(1) 72P-A002B		
(2) 82P-F001C		
(3) 52P-F058E		
(4) 52P-D026D (161353 THRU 161359)		
(6) 52P-D026A (161360 AND UP)		
(6) Doors 3, 13R, 14R, and 10R		
(7) Relay 72K-F005	-	-

Table 2. AUG BIT Status Displays DEGD

Support Equipment Required	
NOTE	
Alternate item type designations or part numbers are listed in parentheses.	
Part Number or Type Designation	Nomenclature
260-6XLP (AN/USM-311)	Multimeter
Materials Required	
None	
NOTE	
Radar Beacon System Functional Schematic (A1-F18AC-630-500, WP006 00) may be used with this procedure.	
For locator, refer to WP013 00.	

Table 2. AUG BIT Status Displays DEGD (Continued)


Malfunction is caused by one of the items listed below:		
Aircraft Wiring Control-Converter C-10382/A No. 2 Relay Panel Assembly Radar Receiver R-1623/APN Relay 72K-F006		
Procedure	No	Yes
<div style="text-align: center;">  </div> <p>To prevent damage to low level devices (switches/relay contacts), do not test for continuity with multimeter on the RX 1 scale. Pin to pin tests that do not go through switches/relay contacts may use the RX 1 scale.</p> <p style="text-align: center;">NOTE</p> <p>The question used in logic tree “Does continuity exist” means to test for the items listed below:</p> <ol style="list-style-type: none"> 1. Pin to pin test per procedural step. 2. Shorts to ground. 3. Shorts between surrounding pins on connectors. 4. Shorts between shield and conductors. 5. Shield continuity. 		
a. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 3 (A1-F18AC-LMM-010).		
(3) Observe FAULT IND on Radar Receiver R-1623/APN.		
(4) Is FAULT IND latched?	c	b
b. Replace Radar Receiver R-1623/APN (A1-F18AC-630-300, WP009 00). Do step 1	-	-
c. Do the substeps below:		
(1) Disconnect 72P-B001A from Radar Receiver R-1623/APN.		
(2) Apply electrical power (A1-F18AC-LMM-000).		
(3) On GND PWR control panel assembly, set and hold 2 switch to B ON for 3 seconds.		

Table 2. AUG BIT Status Displays DEGD (Continued)

Procedure	No	Yes
(4) On Electronic Equipment Control C-10380/ASQ, press BCN, then ON/OFF switch.		
(5) Press ACL option select switch.		
(6) Does 28vdc exist from 72P-B001A pin 9 (positive) to 72P-B001A pin 10 (ground)?	g	d
d. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 13R (A1-F18AC-LMM-010).		
(3) Disconnect 82P-F001C from Control-Converter C-10382/A.		
(4) Does continuity exist from:		
72P-B001A pin 3 to 82P-F001C pin 106		
72P-B001A pin 7 to 82P-F001C pin 105?	e	f
e. Isolate defective aircraft wiring (A1-F18A()-WDM-000). Do step 1	-	-
f. Malfunction has been isolated to Radar Receiver R-1623/APN (A1-F18AC-630-300, WP009 00) or Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00). Do step 1...	-	-
g. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 14R (A1-F18AC-LMM-010). Disconnect 52P-F058E from no. 2 relay panel assembly.		
(3) Does continuity exist from 52P-F058E pin 42 to 72P-B001A pin 9?	e	h
h. Do the substeps below:		
(1) Open door 13R (A1-F18AC-LMM-010).		
(2) Disconnect 82P-F001C from Control-Converter C-10382/A.		
(3) Does continuity exist from 52P-F058E pin 43 to 82P-F001C pin 108?	e	i
i. Do the substeps below:		
(1) Remove relay 72K-F006 (A1-F18AC-420-300, WP032 00).		

Table 2. AUG BIT Status Displays DEGD (Continued)

Procedure	No	Yes
(2) Does continuity exist from relay socket 72K-F006: pin A1 to 52J-F058 pin 42 pin A2 to 52J-F058 pin 51 pin X1 to 52J-F058 pin 51 pin X2 to 52J-F058 pin 43?	j	k
j. Malfunction has been isolated to no. 2 relay panel assembly wiring (A1-F18AC-420-300, WP032 00). Do step 1	-	-
k. Malfunction has been isolated to relay 72K-F006 (A1-F18AC-420-300, WP032 00) or to Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00). Do step 1	-	-
l. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:		
(1) 72P-B001A		
(2) 82P-F001C		
(3) 52P-F058E		
(4) Doors 3, 13R, and 14R		
(5) Relay 72K-F006	-	-

ORGANIZATIONAL MAINTENANCE

TESTING AND TROUBLESHOOTING

TESTING - FUNCTIONAL TEST

RADAR BEACON SYSTEM

This WP supersedes WP011 00, dated 15 November 1990.

Title	WP Number
Functional Test using Radar Beacon Test Set AN/APM-230B	011 01
Functional Test using Radar Beacon Test Set AN/APM-455	011 02

ORGANIZATIONAL MAINTENANCE
TESTING AND TROUBLESHOOTING
TESTING - FUNCTIONAL TEST USING RADAR BEACON
TEST SET AN/APM-230B
RADAR BEACON SYSTEM

Reference Material

Line Maintenance Procedures A1-F18AC-LMM-000
 Data Link, Instrument Landing, and Radar Beacon Systems A1-F18AC-630-200
 Radar Beacon System Locator WP013 00

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Radar Beacon Test Set and Simulator Hookup, Figure 1	10

Record of Applicable Technical Directives

None

Table 1. Radar Beacon System Functional Test

Procedure	Normal Indication	Remedy for Abnormal Indication
System Required Components		
KA-Band Antenna AS-3362/APN KA-Band Waveguide Assembly or KA-Band Coax Cable/Waveguide Assembly Radar Receiver R-1623/APN Radar Receiver-Transmitter RT-1028/APN-202 X-Band Antenna AS-3017/APN		
Related Systems Required		
Avionics Cooling System Electrical System Maintenance Status Display and Recording System Mission Computer System		

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
Support Equipment Required		
Part Number or Type Designation	Nomenclature	
SM-658/APM	Radar Beacon Simulator	
AN/APM-230B	Radar Beacon Test Set	
74D420039-1001	F-18 Utility Power Adapter	
Material Required		
None		
NOTE		
For locator, refer to WP013 00.		
If a malfunction occurs during this test, make sure circuit breakers listed on figure 1 of WP013 00 are closed.		
1. PRELIMINARY.		
a. Observe WPN SYS FAIL indicator on Digital Display Indicator ID-2150/ASM-612 in nose wheelwell.	WPN SYS FAIL indicator is black (not latched).	If latched, do built-in test/reset procedure (A1-F18AC-LMM-000).
b. Connect antenna coupler cable to ANT J1 on Radar Beacon Test Set AN/APM-230B (test set) and to J1 on single X-band antenna coupler (figure 1).		
c. Connect test set to 115vac, 400 Hz electrical power receptacle on F-18 utility power adapter (A1-F18AC-LMM-000).		
d. Connect F-18 utility power adapter to aircraft (A1-F18AC-LMM-000).		
e. Apply electrical power to aircraft (A1-F18AC-LMM-000).		
f. On test set, set ON/OFF switch to ON and allow 15 minutes for warmup.		
g. On GND PWR control panel assembly, set and hold 1 and 2 switches to B ON for 3 seconds.	Switches remain on (latched).	1. If switches unlatch in 10 to 30 seconds, apply external cooling air to aircraft (A1-F18AC-LMM-000).

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>h. On Electronic Equipment Control C-10380/ASQ (equipment control), press EMCON switch if EMCON is displayed on option displays.</p> <p>2. NORM MODE TEST.</p> <p>a. On equipment control, press BCN function select switch and adjust BRT/DIM control for best display.</p> <p>b. On equipment control, press ON/OFF switch.</p>	<p>EMCON is removed from option displays.</p> <p>Radar beacon system options are displayed on equipment control option displays (figure 2).</p> <p>ON is displayed on scratch pad display.</p>	<p>2. If switches will not remain on, troubleshoot (A1-F18AC-FIM-000, WP012 00).</p> <p>Do Electronic Equipment Control C-10380/ASQ Lamp and Switch Test (A1-F18AC-741-200, WP004 00).</p> <p>Do Electronic Equipment Control C-10380/ASQ Lamp and Switch Test (A1-F18AC-741-200, WP004 00).</p> <p>Do electronic equipment control Lamp and Switch Test (A1-F18AC-741-200, WP004 00).</p>
<p style="text-align: center;">NOTE</p> <p>Radar beacon system option displays disappear from equipment control after 30 seconds. To make display reappear, press BCN function select switch again.</p>		
<p>c. On equipment control, press NORM option select switch.</p> <p>d. On equipment control, press E()D() option select switch.</p> <p>e. On equipment control, press EDBL option select switch.</p>	<p>A colon is displayed beside NORM (figure 2).</p> <p>The encode/decode options listed below are displayed on option displays:</p> <p>ESGL EDBL DSGL DDBL</p> <p>The encode double code options listed below are displayed on option displays:</p> <p>1 2 3 4 5</p>	<p>Do electronic equipment control Lamp and Switch Test (A1-F18AC-741-200, WP004 00).</p> <p>Do electronic equipment control Lamp and Switch Test (A1-F18AC-741-200, WP004 00).</p> <p>Do electronic equipment control Lamp and Switch Test (A1-F18AC-741-200, WP004 00).</p>

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
f. On equipment control, press 3 option select switch.	Encode double code option display changes to mode option display listed below: ACL STBY NORM XDAT E(3)D()	Do Electronic Equipment Control C-10380/ASQ Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
g. Repeat step 2.d. Press DDBL option select switch.	The decode double code options listed below are displayed on option displays: 1 2 3 4 5	Do Electronic Equipment Control C-10380/ASQ Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
h. On equipment control, press 3 option select switch.	Decode double code option display changes to mode option display listed below: ACL STBY NORM XDAT E(3)D(3)	Do Electronic Equipment Control C-10380/ASQ Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
i. On test set, set controls as listed below: CAL/OPR/RADAR MONITOR to CAL MODE to SINGLE REPLY CODE to 3.		
j. Turn PWR SET control fully clockwise.		
k. Adjust the KLYSTRON REFL VOLTAGE control for maximum indication on the WR IND meter. If meter pointer goes off scale, turn PWR SET control CCW to maintain an on-scale indication.		

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>l. Adjust the RF PEAKING control for maximum indication on PWR IND meter. Use PWR SET control to maintain an onscale indication.</p> <p>m. Adjust the PWR SET control until the PWR IND meter pointer is at PWR SET line of meter scale.</p> <p>n. Determine the test set operating frequency by slowly turning the FREQUENCY METER control until maximum dip is observed on the PWR IND meter. Read and record FREQUENCY METER indication.</p> <p>o. If test set operating frequency recorded in step 2.n. is not 9375 MHz, increase or decrease test set operating frequency (as required) by readjusting KLYSTRON FREQ control. Repeat steps 2.j. through 2.n. until test set operating frequency is 9375 MHz.</p> <p>p. Adjust FREQUENCY METER control to detune FREQUENCY METER by 100 MHz.</p> <p>q. Set CAL/OPR/RADAR MONITOR switch to OPR.</p> <p>r. Set MODE switch to DOUBLE 3.</p> <p>s. Position single X-band antenna coupler over X-band antenna (figure 1).</p> <p>t. On test set, adjust RF PEAKING control for a maximum on-scale indication on PWR IND meter.</p> <p>u. Determine Radar Receiver-Transmitter RT-1028/APN-202 (receiver-transmitter) transmitting frequency by adjusting FREQUENCY METER control until maximum dip is observed on the PWR IND meter. Record frequency shown on FREQUENCY METER.</p>	<p>1. PWR IND meter pointer is in green area of meter.</p> <p>2. REPLY indicator light comes on.</p> <p>FREQUENCY METER indicates 9310 ± MHz.</p>	<p>Do table 1 (WP012 00).</p> <p>Replace Radar Receiver-Transmitter RT-1028/APN-202 (A1-F18AC-630-300, WP008 00).</p>

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>v. Remove single X-band antenna coupler from X-band antenna.</p> <p>w. On test set, set MODE switch to SINGLE.</p> <p>x. On equipment control, press E(3)D(3) option switch.</p>	<p>The encode/decode options listed below are displayed on option displays (figure 2):</p> <p>ESGL EDBL DSGL DDBL</p>	<p>Replace Control-Converter C-10382/A (A1-F18AC-745-300, WP00500).</p>
<p>y. On equipment control, press DSGL option select switch.</p>	<p>Encode/decode option display changes to mode option display listed below:</p> <p>ACL STBY NORM XDAT E(3)D(S)</p>	<p>Replace Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00).</p>
<p>z. Position single X-band antenna coupler over X-band antenna (figure 1).</p>		
<p>aa. On test set, observe REPLY indicator light.</p>	<p>REPLY indicator light comes on.</p>	<p>Replace Control-Converter C-20382/A (A1-F18AC-741-300, WP005 00).</p>
<p>ab. On equipment control, press STBY option select switch.</p>	<p>1. A colon is displayed beside STBY (figure 2).</p> <p>2. On test set, REPLY indicator light goes off.</p>	<p>Replace Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00).</p> <p>Do table 2 (WP012 00).</p>
<p>ac. On equipment control, press NORM option select switch.</p>	<p>1. A colon appears beside NORM (figure 2).</p> <p>2. On test set, REPLY indicator light comes on.</p>	<p>Replace Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00).</p>

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
ad. On equipment control, press EMCON switch.	1. EMCON is displayed vertically in option display (figure 2).	Do Electronic Equipment Control C-10380/ASQ Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
	2. Scratch pad display is blank.	
	3. On test set, REPLY indicator light goes off.	
ae. On equipment control, press EMCON switch.	Option display changes to mode option display listed below (figure 2): ACL STBY NORM XDAT E(3)D(S)	Replace Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00).
af. Remove single X-band antenna coupler from X-band antenna (figure 1).		
ag. On test set, set ON/OFF switch to OFF.		
3. ACL MODE TEST.		
a. Connect Radar Beacon Simulator SM-658/APM (simulator) to test set with two RF cable assemblies and one power cable assembly (figure 1).		
b. On simulator, set controls as listed below: MOD to OFF PWR to OFF		
c. On test set, set controls as listed below: ON/OFF to ON MODE to ACLS REPLY CODE to 1 (allow 15 minute warmup)		

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>d. On equipment control, press BCN function select switch, then ACL option select switch.</p> <p>e. Position single X-band antenna coupler over X-band antenna (figure 1).</p> <p>f. On simulator, set PWR switch to ON.</p> <p>g. Position simulator over KA-Band Antenna AS-3362/APN (KA-band antenna) (figure 1).</p> <p>h. On test set, adjust RF PEAKING control for maximum indication on PWR IND meter.</p>	<p>Radar beacon system options are displayed on equipment control option displays and a colon appears ACL (figure 2).</p> <p>PWR IND meter pointer is in green area of meter.</p>	<p>Do Electronic Equipment Control C-10382/ASQ Lamp Switch Test (A1-F18AC-741-200, WP004 00).</p>
<p style="text-align: center;">NOTE</p> <p>It may be required to adjust the RF PEAKING control to get a PWR SET indication on the PWR IND meter before the MOD TEST light comes on.</p> <p>It may also be required to reposition the simulator over the KA-band antenna before the MOD TEST light comes on.</p>		
<p>i. On simulator, set MOD ON/OFF switch to ON.</p> <p>4. FINAL.</p> <p>a. On simulator, set MOD ON/OFF switch to OFF and PWR ON/OFF switch to OFF.</p> <p>b. On test set, set ON/OFF switch to OFF.</p> <p>c. On equipment control, press BCN function select switch, then ON/OFF switch.</p> <p>d. Remove electrical power (A1-F18AC-LMM-000).</p> <p>e. Disconnect test equipment.</p>	<p>MOD TEST light comes on.</p>	<p>Do table 3 (WP012 00).</p>

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>f. Disconnect F-18 utility power adapter (A1-F18AC-LMM-000).</p> <p>g. Observe Digital Display Indicator ID-2150/ASM-612 in nose wheelwell.</p>	WPN SYS FAIL indicator is black (not latched).	Read, record, and then reset maintenance codes (A1-F18AC-LMM-000). If code 004 exists, replace Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00).

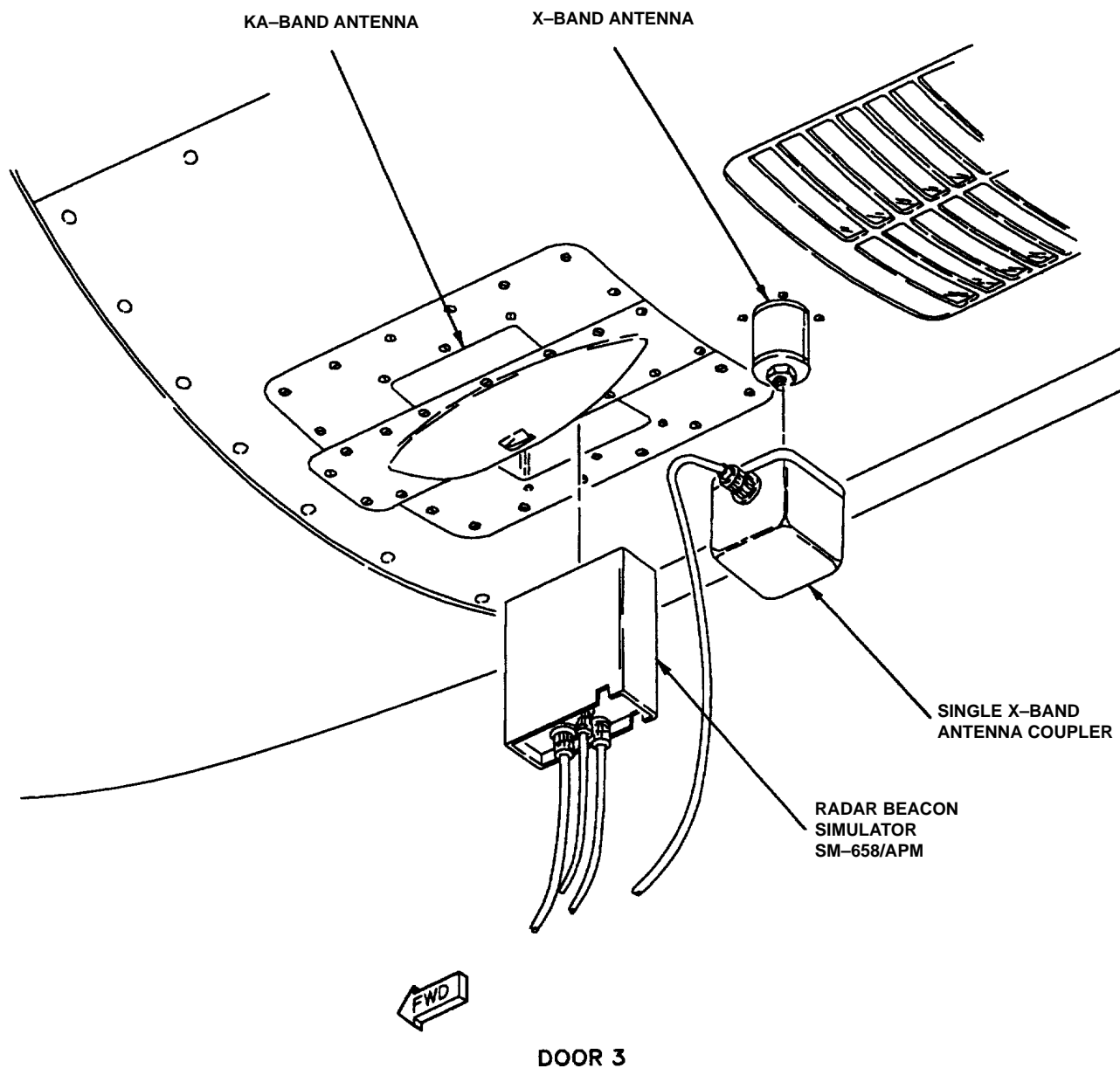


Figure 1. Radar Beacon Test Set and Simulator Hookup (Sheet 1)

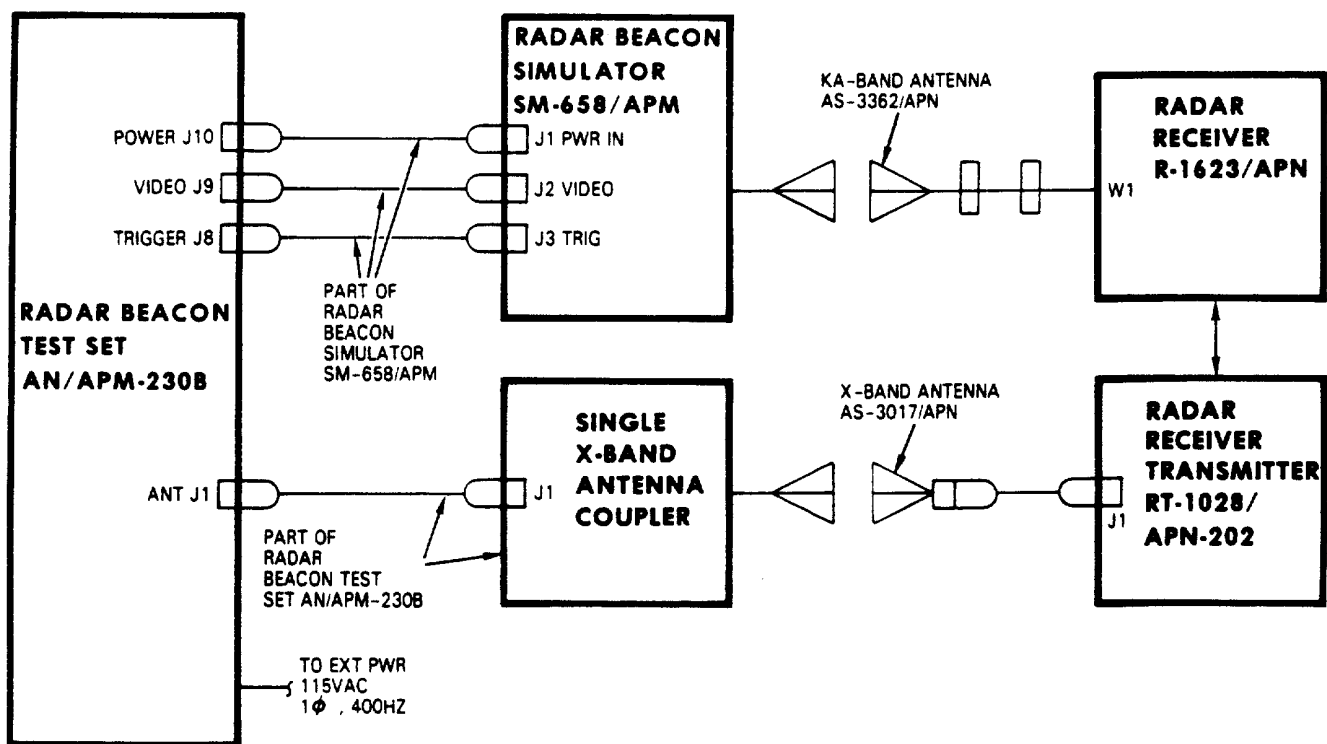


Figure 1. Radar Beacon Test Set and Simulator Hookup (Sheet 2)

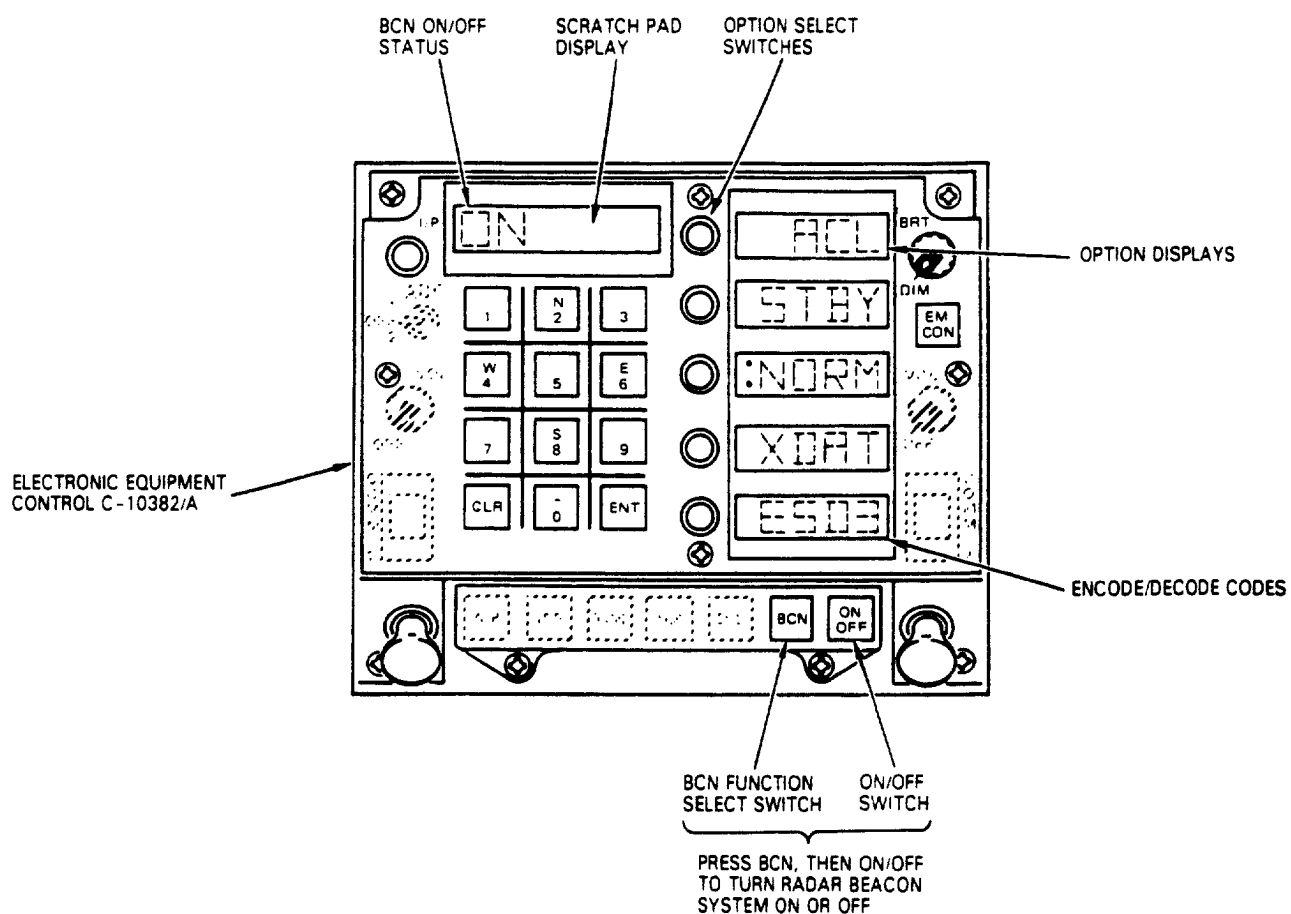
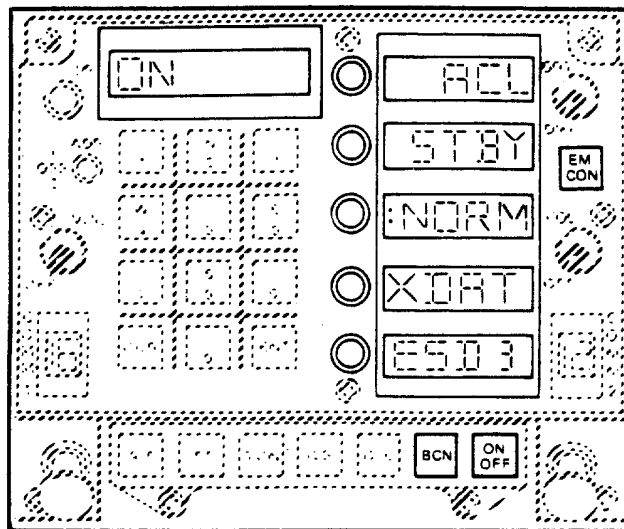


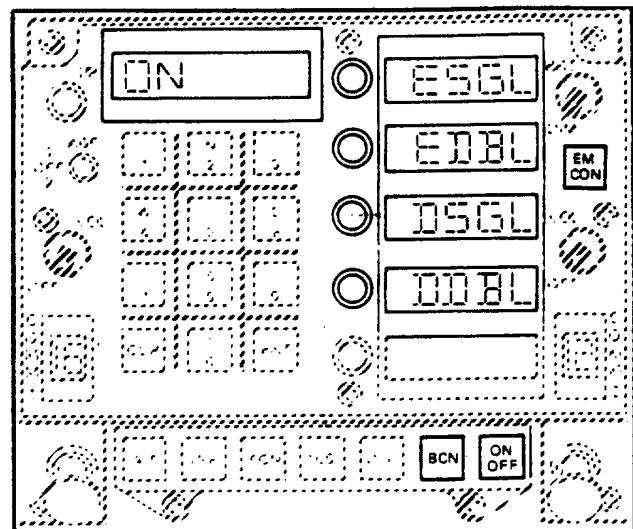
Figure 2. Cockpit Displays (Sheet 1)

**MODE OPTION DISPLAY**

DISPLAYS MODES AVAILABLE TO RADAR BEACON SYSTEM. DISPLAYED WHEN BCN FUNCTION SELECT SWITCH IS PRESSED. A COLON APPEARS BESIDE THE MODE SELECTED. THE LAST OPTION INDICATES THE ENCODE AND DECODE CODES BEING USED - IN THIS EXAMPLE, ENCODE SINGLE AND DECODE DOUBLE 3. WHEN LAST OPTION SELECT SWITCH PRESSED, DISPLAY CHANGES TO (B).

A**ENCODE/DECODE OPTION DISPLAY**

DISPLAYS ENCODE/DECODE OPTIONS WHEN LAST OPTION SELECTED ON DISPLAY (A). IF ESGL OR DSGI SELECTED ON DISPLAY (B), DISPLAY CHANGES TO (A), WITH AN S DISPLAYED IN LAST OPTION. IF EDBL OR DDBL SELECTED ON DISPLAY (B), DISPLAY CHANGES TO (C).

B**EDBL/DDBL CODE OPTION DISPLAY**

DISPLAYS CODES AVAILABLE FOR ENCODING AND DECODING WHEN EDBL OR DDBL SELECTED ON DISPLAY (B). WHEN ONE OF FIVE CODES IS SELECTED, DISPLAY (C) CHANGES TO (A), WITH THE CODE DISPLAYED IN LAST OPTION.

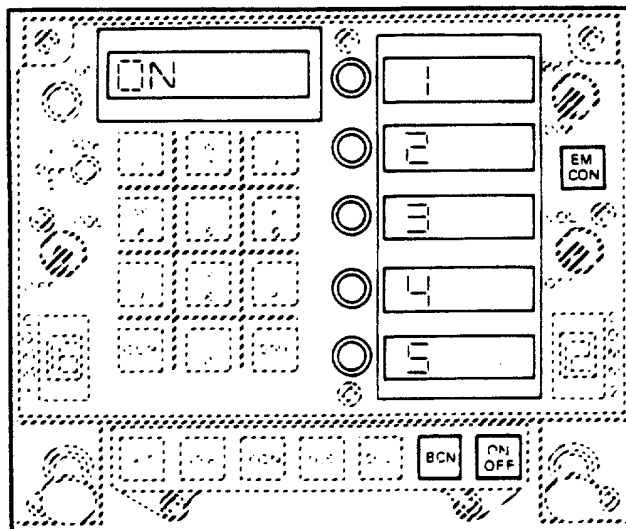
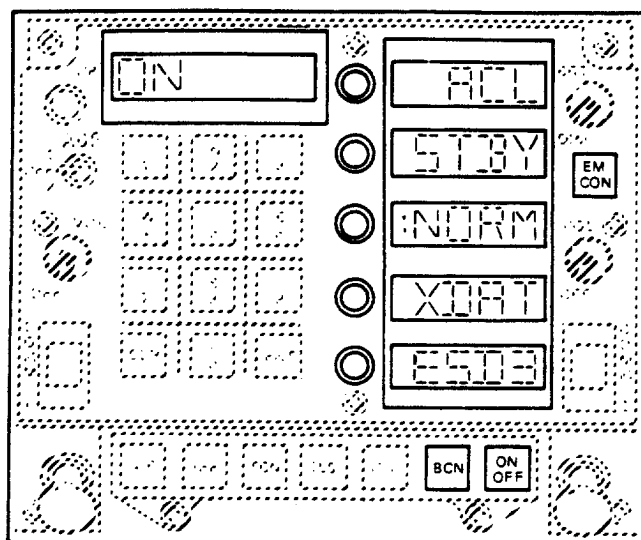
C

Figure 2. Cockpit Displays (Sheet 2)



D

RADAR BEACON DISPLAY

IF EMCON IS SELECTED,
DISPLAY (D) CHANGES TO
(E), PREVENTING THE
RADAR BEACON FROM
TRANSMITTING.

EMISSION CONTROL DISPLAY

DISPLAYED WHEN EMCON
SELECTED, TO DESELECT
EMCON, PRESS THE EMCON
SWITCH AGAIN, DISPLAY (E)
CHANGES TO (D). RADAR
BEACON RETURNS TO
NORMAL OPERATION.

E

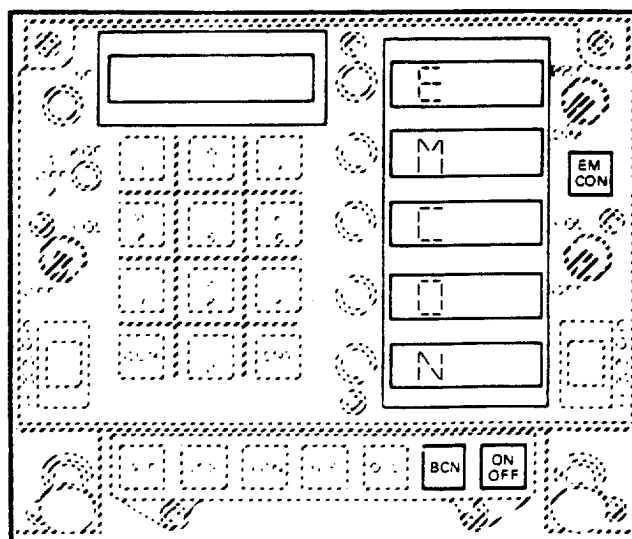


Figure 2. Cockpit Displays (Sheet 3)

ORGANIZATIONAL MAINTENANCE
TESTING AND TROUBLESHOOTING
TESTING - FUNCTIONAL TEST USING RADAR BEACON
TEST SET AN/APM-455
RADAR BEACON SYSTEM

Reference Material

Line Maintenance Procedures	A1-F18AC-LMM-000
Data Link, Instrument Landing, and Radar Beacon Systems	A1-F18AC-630-200
Radar Beacon System Locator	WP013 00
Radar Beacon Test Set AN/APM-455	NAVAIR 16-30APM455-1

Alphabetical Index

Subject	Page No.
Cockpit Displays, Figure 2	18
Radar Beacon System Functional Test, Table 1	1
Radar Beacon Test Set and Antenna Coupler Hookup, Figure 1	16

Record of Applicable Technical Directives

None

WARNING

Do not do Radar Beacon System Functional Test during ACLS training operations at shoreline stations when in line of sight of the SPN-42/46 or on the aircraft carrier flight deck during recovery operations as this may interfere with ACLS returns from aircraft on approach.

Table 1. Radar Beacon System Functional Test

Procedure	Normal Indication	Remedy for Abnormal Indication
System Required Components		
KA-Band Antenna AS-3362/APN KA-Band Waveguide Assembly or KA-Band Coax Cable/Waveguide Assembly Radar Receiver R-1623/APN Radar Receiver-Transmitter RT-1028/APN-202 X-Band Antenna AS-3017/APN		

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication										
<p>Related Systems Required</p> <p>Avionics Cooling System Electrical System Maintenance Status Display and Recording System Mission Computer System</p> <p>Support Equipment Required</p> <table><thead><tr><th>Part Number or Type Designation</th><th>Nomenclature</th></tr></thead><tbody><tr><td>AN/APM-455</td><td>Radar Beacon Test Set</td></tr><tr><td>74D420039-1001</td><td>F-18 Utility Power Adapter</td></tr><tr><td>61205-40210-10</td><td>Antenna Coupler Interconnection Group (ACIG)</td></tr><tr><td>Torque Wrench</td><td>0 to 50 Inch-Pounds</td></tr></tbody></table> <p>Material Required</p> <p>None</p> <p>NOTE</p> <p>For locator, refer to WP013 00.</p> <p>If a malfunction occurs during this test, make sure circuit breakers listed on figure 1 of WP013 00 are closed.</p>			Part Number or Type Designation	Nomenclature	AN/APM-455	Radar Beacon Test Set	74D420039-1001	F-18 Utility Power Adapter	61205-40210-10	Antenna Coupler Interconnection Group (ACIG)	Torque Wrench	0 to 50 Inch-Pounds
Part Number or Type Designation	Nomenclature											
AN/APM-455	Radar Beacon Test Set											
74D420039-1001	F-18 Utility Power Adapter											
61205-40210-10	Antenna Coupler Interconnection Group (ACIG)											
Torque Wrench	0 to 50 Inch-Pounds											
<p>1. TEST SET BUILT-IN TEST (BIT).</p> <p>a. Be sure AC/PWR/CHG and BAT PWR ON/OFF switches are set to OFF.</p>												
<p>NOTE</p> <p>When using internal battery power, if display remains dark or displays BLOW or DEAD, recharge the battery.</p> <p>In the following step, if display does not change after 5 seconds, display reverts to power saving mode as indicated by a scrolling dot. Any change in display data restores display.</p>												
<p>b. Set selected power source switch to ON.</p>	<p>Display indicates VX.X (X.X is the software number) and changes to REDY after 5 seconds.</p>	<p>If display does not indicate VX.X or displays codes other than REDY, replace the test set.</p>										

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>c. Set FUNCTION SELECT switch to SELF TEST.</p> <p>d. Connect rf cable to 1W10 between test set RF IN/OUT connector J3 and CABLE TEST connector J4.</p> <p>e. Press and release OPERATE switch.</p> <p>2. PRELIMINARY.</p> <p>a. Observe WPN SYS FAIL indicator on Digital Display Indicator ID-2150/ASM-612 in nose wheelwell.</p> <p>b. Connect rf cable 1W10 to J1 of X-band coupler assembly 1A2 and to RF IN/OUT connector J3 on Radar Beacon Test Set AN/APM-455 (test set).</p>	<p>1. Display indicates SELF, 0000, and increments all displays from 0000 to 1111 thru 9999 then *-*-* followed by <input type="text"/><input type="text"/><input type="text"/><input type="text"/></p> <p>2. Display then indicates SELF and after approximately 2 minutes indicates PASS.</p> <p>WPN SYS FAIL indicator is black (not latched)</p>	<p>If display indicates AC?? with AC power applied, be sure only the selected power source switch is on.</p> <p>If display indicates BLOW when using internal battery power, recharge the battery or use AC power source.</p> <p>If display indicates CHGT, battery is not charging as a result of to excessive test set temperature.</p> <p>If FAIL is displayed, use INC/DEC switch to read fault codes.</p> <p>1. If display indicates error code E401, inspect integrity of rf cable 1W10.</p> <p>2. If display indicates error code E402 or E403, replace rf cable 1W10.</p> <p>3. For all other error codes, replace the test set.</p> <p>If latched, do Built-In Test/Reset procedure (A1-F18AC-LMM-000).</p>

Table 1. Radar Beacon System Functional Test (Continued)


Procedure	Normal Indication	Remedy for Abnormal Indication
<div style="text-align: center;">  </div> <p>Make sure 90 °elbow in rf cable 1W10 is facing down to prevent damage to the cable.</p>		
<p>c. Position X-band coupler assembly 1A2 on aircraft X-band antenna AS-3017/APN (figure 1).</p> <p>d. Connect KA-band adapter assembly 1A4 to waveguide port J2 of test set using four captive screws (figure 1).</p> <p>e. Remove four mounting screws from forward end of KA-Band Antenna AS-3362/APN.</p> <p>f. Install AS-3362 adapter plate 1A6 over forward end of KA-band antenna using four mounting screws removed in step e. (figure 1).</p>		
<div style="text-align: center;"> <p>NOTE</p> <p>If using test set battery power, go to step l.</p> </div>		
<p>g. Connect plug of cable assembly 1W1 to AC INPUT connector J1 on test set and the plug on the other end of 1W1 to connector on power plug adapter 1W2.</p> <p>h. Connect other end of cable 1W2 to 400 Hz electrical power receptacle on F-18 utility power adapter (A1-F18AC-LMM-000).</p> <p>i. Connect F-18 utility power adapter to aircraft (A1-F18AC-LMM-000).</p> <p>j. Apply electrical power to the aircraft (A1-F18AC-LMM-000).</p>		

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>k. On test set, set BAT PWR switch to OFF and AC PWR/CHG ON/OFF switch to ON.</p>	<p>Test set defaults to the following parameters:</p> <p>ACFT TYPE F-14 INTRG CODE SGL INTRG FREQ 9375 MHz REPLY CODE SGL REPLY FREQ 9310 MHz</p>	<p>Replace test set.</p>
<p>l. If using test set battery power:</p> <p>(1) Set BAT PWR switch to ON and AC PWR/CHG ON/OFF switch to OFF.</p>	<p>Test set defaults to the following parameters:</p> <p>ACFT TYPE F-14 INTRG CODE SGL INTRG FREQ 9375 MHz REPLY CODE SGL REPLY FREQ 9310 MHz</p>	<p>Replace test set.</p>
<p>(2) Apply electrical power to aircraft (A1-F18AC-LMM-000).</p>		
<p>m. On GND PWR control panel assembly, set 1 and 2 switches to B ON and hold for 3 seconds.</p>	<p>Switches remain on (latched).</p>	<p>1. If switches unlatch in 10 to 30 seconds, apply external cooling air to aircraft (A1-F18AC-LMM-000).</p> <p>2. If switches will not remain on, troubleshoot. (A1-F18AC-FIM-000, WP012 00).</p>
<p>n. On electronic equipment control (equipment control), adjust BRT/DIM control for best display.</p>		
<p>o. Press EMCON switch if EMCON is displayed on option displays.</p>	<p>EMCON is removed from option displays.</p>	<p>Do Lamp and Switch Test (A1-F18AC-741-200, WP004 00).</p>
<p>3. NORM MODE TEST.</p>		
<p>a. Do Radar Beacon System Built-In Test (WP009 00).</p>		

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
b. On equipment control, press BCN function select switch.	Radar beacon system options are displayed on equipment control option displays (figure 2).	Do Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
c. Press ON/OFF switch.	ON is displayed on scratch pad display.	Do Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
<p style="text-align: center;">NOTE</p> <p>Radar beacon system option displays disappear from equipment control after 30 seconds. To make display reappear, press BCN function select switch again.</p>		
d. Press BCN function select switch.	Radar beacon system options are displayed on equipment control option displays (figure 2).	Do Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
e. Press NORM option select switch.	A colon is displayed next to NORM (figure 2).	Do Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
f. Press E()D() option select switch.	The encode/decode options listed below are displayed on option displays:	Do Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
	ESGL EDBL DSGL DDBL	
g. Press EDBL option select switch.	The encode double code options listed below are displayed on option displays:	Do Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
	1 2 3 4 5	
h. Press 3 option select switch.	Encode double code option display changes to mode option display listed below:	Do Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
	ACL STBY NORM XDAT E(3)D(S)	

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
4. RADAR BEACON TEST (SEQUENCE 1).		
a. On test set, set FUNCTION SELECT switch to INTRG CODE. If required, toggle the INC/DEC switch until test set display indicates SGL.	Test set display indicates SGL. If the INC/DEC switch was toggled, the display is flashing.	Replace test set.
b. Press and release OPERATE switch.	Test set display is not flashing.	Replace test set.
c. Set FUNCTION SELECT switch to INTRG FREQ. If required, toggle the INC/DEC switch until test set display indicates 9375 MHz.	Test set display indicates 9375 MHz. If the INC/DEC switch was toggled, the display is flashing.	Replace test set.
d. Press and release OPERATE switch.	Test set display is not flashing.	Replace test set.
e. Set FUNCTION SELECT switch to REPLY CODE. If required, toggle the INC/DEC switch until test set display indicates DBL3.	Test set display indicates DBL3. If the INC/DEC switch was toggled, the display is flashing.	Replace test set.
f. Press and release OPERATE switch.	Test set display is not flashing.	Replace test set.
g. Set FUNCTION SELECT switch to REPLY FREQ. If required, toggle the INC/DEC switch until test set display indicates 9310 MHz.	Test set display indicates 9310 MHz. If the INC/DEC switch was toggled, the display is flashing.	Replace test set.
h. Press and release OPERATE switch.	Test set display is not flashing.	Replace test set.
i. Set FUNCTION SELECT switch to TEST/RESULT and press and release OPERATE switch.	1. Test set display indicates RDBL. 2. After 5 seconds the display indicates scrolling dots which continue until end of test. 3. Test set display indicates PASS.	Replace test set. Replace test set. If test set display indicates a fault code, refer to troubleshooting, WP012 00, table 4.

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
5. RADAR BEACON TEST (SEQUENCE 2).		
a. Press E()D() option select switch.	The encode/decode options listed below are displayed on option displays: ESGL EDBL DSGL DDBL	Do Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
b. Press ESGL option select switch.	Encode/Decode option display changes to mode option display listed below: ACL STBY NORM XDAT E(S)D(S)	Do Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
c. Press E()D() option select switch.	The encode/decode options listed below are displayed on option displays: ESGL EDBL DSGL DDBL	Do Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
d. Press DDBL option select switch.	The decode double code options listed below are displayed on option displays: 1 2 3 4 5	Do Lamp and Switch Test (A1-F18AC-741-200, WP004 00).

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
e. Press 3 option select switch.	Decode double code option display changes to mode option display listed below: ACL STBY NORM XDAT E(S)D(3)	Do Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
f. On test set, set FUNCTION SELECT switch to REPLY CODE. If required, toggle the INC/DEC switch until test set display indicates SGL.	Test set display indicates SGL. If the INC/DEC switch was toggled, the display is flashing.	Replace test set.
g. Press and release OPERATE switch.	Test set display is not flashing.	Replace test set.
h. Set FUNCTION SELECT switch to REPLY FREQ. If required, toggle the INC/DEC switch until test set indicates 9310 MHz.	Test set display indicates 9310 MHz. If the INC/DEC switch was toggled, the display is flashing.	Replace test set.
i. Press and release OPERATE switch.	Test set display is not flashing.	Replace test set.
j. Set FUNCTION SELECT switch to INTRG CODE. If required, toggle the INC/DEC switch until test set display indicates DBL3.	Test set display indicates DBL3. If the INC/DEC switch was toggled, the display is flashing.	Replace test set.
k. Press and release OPERATE switch.	Test set display is not flashing.	Replace test set.
l. Set FUNCTION SELECT switch to REPLY FREQ. If required, toggle the INC/DEC switch until test set display indicates 9375 MHz.	Test set display indicates 9375 MHz. If the INC/DEC switch was toggled, the display is flashing.	Replace test set.
m. Press and release OPERATE switch.	Test set display is not flashing.	Replace test set.
n. Set FUNCTION SELECT switch to TEST/RESULT and press and release OPERATE switch.	1. Test set display indicates IDBL. 2. After 5 seconds the display indicates scrolling dots which continue until end of test.	Replace test set. Replace test set.

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>6. RADAR BEACON TEST (SEQUENCE 3).</p> <p>a. On equipment control, press E()D() option select switch.</p>	<p>3. Test set display indicates PASS.</p> <p>The encode/decode options listed below are displayed on option displays:</p> <p>ESGL EDBL DSGL DDBL</p>	<p>If test set display indicates a fault code, refer to troubleshooting, WP012 00, table 4.</p>
<p>b. Press DSGL option select switch.</p>	<p>Encode/Decode option display changes to mode option display listed below:</p> <p>ACL STBY NORM XDAT E(S)D(S)</p>	<p>Do Lamp and Switch Test (A1-F18AC-741-200, WP004 00).</p>
<p>c. On test set, set FUNCTION SELECT switch to INTRG CODE. If required, toggle the INC/DEC switch until test set display indicates SGL.</p>	<p>Test set display indicates SGL and is flashing.</p>	<p>Replace test set.</p>
<p>d. Press and release OPERATE switch.</p>	<p>Test set display is not flashing.</p>	<p>Replace test set.</p>
<p>e. Set FUNCTION SELECT switch to INTRG FREQ. If required, toggle the INC/DEC switch until test set indicates 9375 MHz.</p>	<p>Test set display indicates 9375 MHz. If the INC/DEC switch was toggled, the display is flashing.</p>	<p>Replace test set.</p>
<p>f. Press and release OPERATE switch.</p>	<p>Test set display is not flashing.</p>	<p>Replace test set.</p>

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
g. Set FUNCTION SELECT switch to REPLY CODE. If required, toggle the INC/DEC switch until test set display indicates SGL.	Test set display indicates SGL. If the INC/DEC switch was toggled, the display is flashing.	Replace test set.
h. Press and release OPERATE switch.	Test set display is not flashing.	Replace test set.
i. Set FUNCTION SELECT switch to REPLY FREQ. If required, toggle the INC/DEC switch until test set display indicates 9310 MHz.	Test set display indicates 9310 MHz. If the INC/DEC switch was toggled, the display is flashing.	Replace test set.
j. Press and release OPERATE switch.	Test set display is not flashing.	Replace test set.
k. Set FUNCTION SELECT switch to TEST/RESULT and press and release OPERATE switch.	1. Test set display indicates SGL. 2. After 5 seconds the display indicates scrolling dots which continue until end of test. 3. Test set display indicates PASS.	Replace test set. Replace test set. If test set display indicates a fault code, refer to troubleshooting, WP012 00, table 4.
7. ALL WEATHER CARRIER LANDING SYSTEM (ACLS) TEST.		
a. Set FUNCTION SELECT switch to ACFT TYPE. If required, toggle the INC/DEC switch until test set display indicates F-18.	Test set display is flashing.	Replace test set.
b. Press and release OPERATE switch.	Test set display is not flashing.	Replace test set.
<p style="text-align: center;">NOTE</p> <p>When ACLS is selected as INTRG CODE, default characteristics for ACLS are loaded. Default reply code of SGL is selected and the list of select reply codes is limited to SGL and ACLS.</p>		
c. Set FUNCTION SELECT switch to INTRG CODE. If required, toggle the INC/DEC switch until test set display indicates ACLS.	Test set display is flashing.	Replace test set.

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
d. Press and release OPERATE switch.	Test set display is not flashing.	Replace test set.
e. Set FUNCTION SELECT switch to REPLY FREQ. If required, toggle the INC/DEC switch until test set display indicates 9310 MHz.	Test set display indicates 9310 MHz. If the INC/DEC switch was toggled, the display is flashing.	Replace test set.
f. Press and release OPERATE switch.	Test set display is not flashing.	Replace test set.
<p style="text-align: center;">NOTE</p> <p>When KA POWER switch is set to HIGH, FREQ is not checked.</p>		
g. Set KA POWER switch to HIGH.		
h. Set FUNCTION SELECT switch to TEST/RESULT.		
i. On equipment control, press ACL option select switch.	A colon is displayed next to ACL.	Do Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
<p style="text-align: center;">NOTE</p> <p>Using index pins as a guide, KA-band coupler assembly 1A4 is fully mated when seated in the receiver groove of adapter plate 1A6.</p> <p>Hold test set steady for approximately 1 minute.</p>		
j. For remainder of test, hold test set, with KA-band coupler assembly 1A4 attached, against adapter plate 1A6 (figure 1).		
k. Press and release OPERATE switch.	1. Test set display indicates ACLS. 2. After 5 seconds the display indicates scrolling dots.	Replace test set. Replace test set.

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p align="center">NOTE</p> <p>If test set display indicates FAIL, use INC/DEC switch to review failure codes.</p> <p>If test set display indicates failure code AMOD only, do steps l. thru u. If AMOD is not displayed, go to step v.</p>		
l. Set FUNCTION SELECT switch to SELF TEST and press and hold OPERATE switch until ILEV is displayed on test set display.	3. Test set display indicates PASS. Go to step 8.	If test set display indicates a fault code, refer to troubleshooting, WP012 00, table 4.
m. Set FUNCTION SELECT switch to INTRG CODE. If required, toggle the INC/DEC switch until test set display indicates ACLS.	Test set display is flashing.	Replace test set.
n. Press and release OPERATE switch.	Test set display indicates ACLS and is not flashing.	Replace test set.
o. Set FUNCTION SELECT switch to TEST/RESULT.		
p. Set KA POWER switch to HIGH.		
q. Hold test set, with KA-band coupler plate 1A4 attached, against adapter 1A6 at front of KA-band antenna (figure 1).		
r. Press and release OPERATE switch.	1. Test set display indicates IL-K.	Replace test set.
	2. After approximately 30 seconds, test set display indicates DELY followed by a 4-digit number which will be continuously updated.	Replace test set.
s. Press and hold OPERATE switch until display goes blank for 10 seconds then release OPERATE switch.	Test set display indicates a flashing N/A.	Replace test set.

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p align="center">NOTE</p> <p>Hold test set steady to be sure of accurate interrogations of signal.</p>		
t. Toggle INC/DEC switch.	XMOD is momentarily displayed until display indicates an AMOD value of between +0.5 to +1.2dB.	Refer to troubleshooting, WP012 00, table 4.
u. Set test set FUNCTION SELECT switch to REPLY FREQ and remove test set, with KA-band coupler plate attached, from adapter 1A6.		
<p align="center">NOTE</p> <p>To return to PASS/FAIL mode of operation, set test set AC PWR/CHG switch to OFF then back to ON if using external electrical power or set BAT PWR switch to OFF then back to ON if using test set battery power. Also, INTRG CODE requires ACLS to be selected and AIRCRAFT TYPE needs F18 to be selected.</p> <p>When KA POWER switch is set to LOW, AMOD and PWR are not tested.</p>		
v. Set KA POWER switch to LOW.		
w. Set FUNCTION SELECT switch to TEST/RESULT and, on equipment control, verify ACL is displayed.		
<p align="center">NOTE</p> <p>Using index pins as a guide, KA-band coupler assembly 1A4 is fully mated when seated in the receiver groove of adapter plate 1A6.</p>		
x. For remainder of test, hold test set, with KA-band coupler assembly 1A4 attached, against adapter plate 1A6.		
y. Press and release OPERATE switch.	<ol style="list-style-type: none"> 1. Test set display indicates ACLS. 2. After 5 seconds the display indicates scrolling dots. 3. Test set display indicates PASS. 	<p>Replace test set.</p> <p>Replace test set.</p> <p>If test display indicates a fault code, refer to troubleshooting, WP012 00, table 4.</p>

Table 1. Radar Beacon System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>8. FINAL.</p> <p>a. Set test set ON/OFF switch to OFF.</p> <p>b. On equipment control, press BCN function select switch, then ON/OFF switch.</p> <p>c. Remove electrical power (A1-F18AC-LMM-000).</p> <p>d. Remove X-band antenna coupler 1A2 from aircraft radar beacon X-band antenna (figure 1).</p> <p>e. Disconnect rf cable 1W10 from J1 of X-band antenna coupler 1A2 and test set connector J3 (figure 1).</p> <p>f. If using 115vac, 400 Hz power, disconnect power cables from test set connector J1 and from 400 Hz electrical power receptacle on F-18 utility power adapter (A1-F18AC-LMM-000).</p> <p>g. Remove F-18 utility power adapter from the aircraft (A1-F18AC-LMM-000).</p> <p>h. Remove KA-band adapter assembly 1A4 from test set waveguide port J2.</p> <p>i. Remove four screws and adapter plate 1A6 from forward end of KA-band antenna.</p> <p>j. Reinstall the four screws in the forward end of KA-band antenna and torque to 22.5 22.5 inch-pounds.</p> <p>k. Observe Digital Display Indicator ID-2150/ASM-612 in nose wheelwell.</p>	<p>WPN SYS FAIL indicator is black (not latched).</p>	<p>If code 004 exists, replace control-converter (A1-F18AC-741-300, WP005 00).</p>

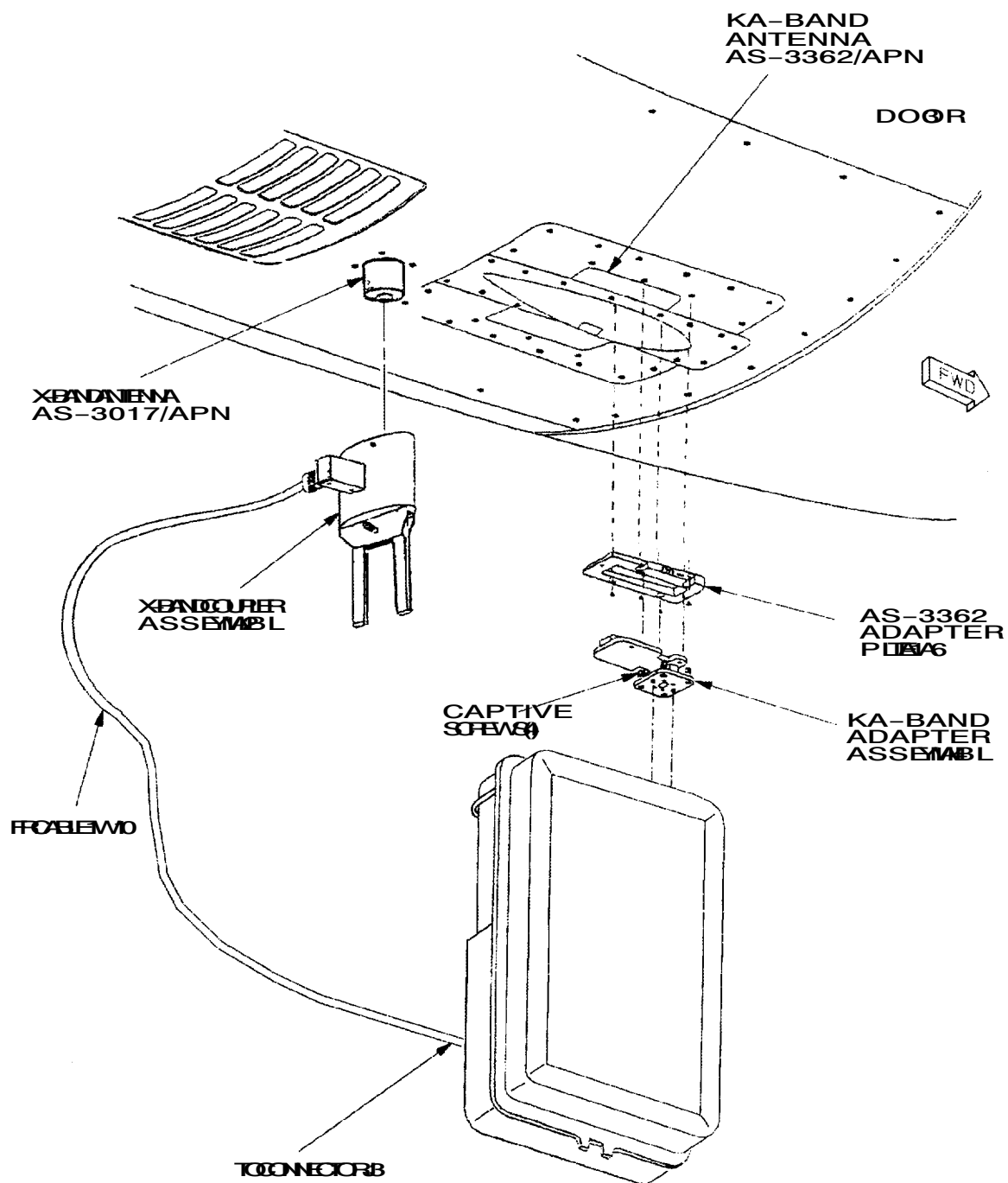
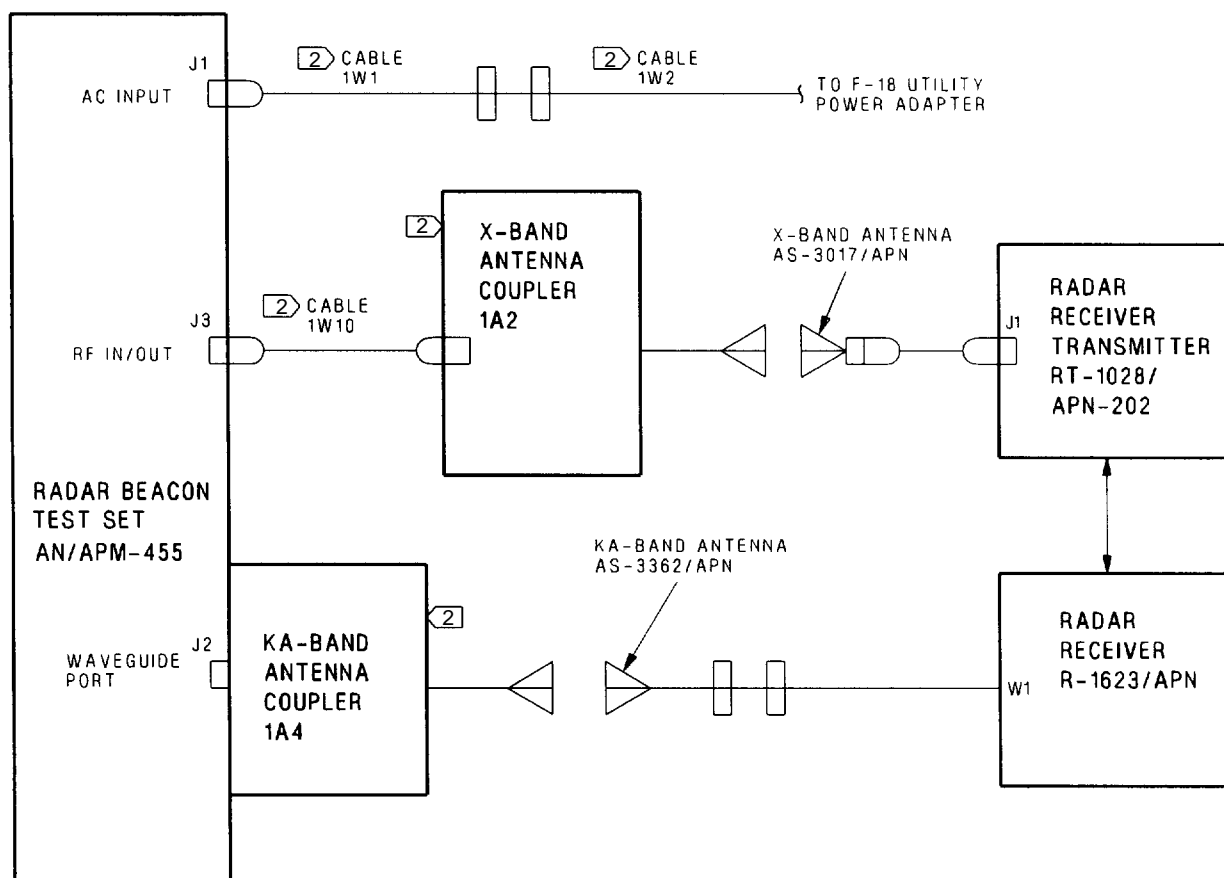


Figure 1. Radar Beacon Test Set and Antenna Coupler Hookup (Sheet 1)

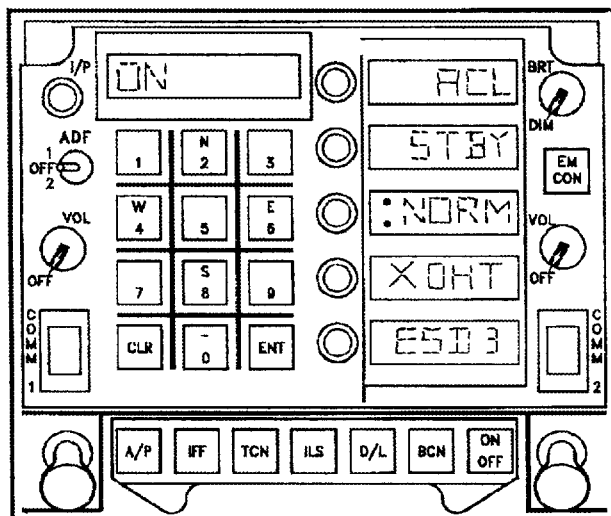


LEGEND

1. CABLE 1W10 REQUIRED FOR CONNECTION TO F-18 UTILITY POWER ADAPTER
2. CABLE 1W10 REQUIRED FOR CONNECTION TO F-18 UTILITY POWER ADAPTER

Figure 1. Radar Beacon Test Set and Antenna Coupler Hookup (Sheet 2)





MODE OPTION DISPLAY

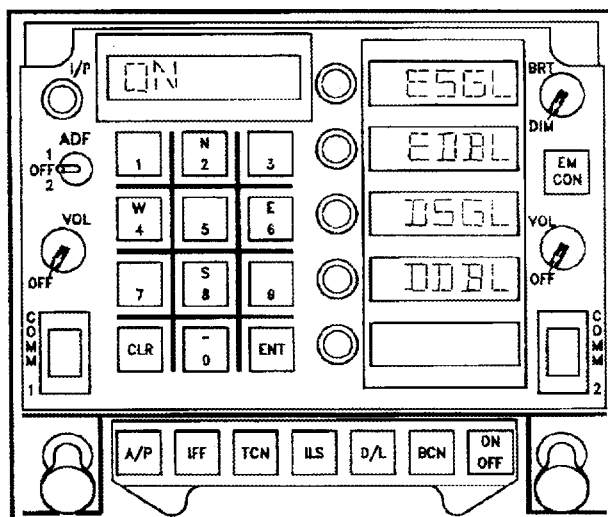
DISK CODES AVAILABLE FOR
BEACONS, SENSE, PLANE, WHEN
FUNCTION SELECTED, NOT IF PRESSED
COLOR, AFTER BEACON, IF MODE SELECTED
THE LASER OPTION, NOT IF SENSE CODE AND
DECODE CODES, USED IN HEXA, ARE
ENCODING AND DECODE, WHEN
LASER OPTION SELECTED, NOT IF PRESSED
DISK, RANGE, SO, Q

A

ENCODE/DECODE OPTION DISPLAY

DISK CODES AVAILABLE FOR
OP, NOT IF SENSE, PLANE
SELECTED, NOT IF PRESSED
COLOR, AFTER BEACON, IF MODE SELECTED
THE LASER OPTION, NOT IF SENSE CODE AND
DECODE CODES, USED IN HEXA, ARE
ENCODING AND DECODE, WHEN
LASER OPTION SELECTED, NOT IF PRESSED
DISK, RANGE, SO, Q

B



EDBL/DDBL CODE OPTION DISPLAY

DISK CODES AVAILABLE FOR
FOR ENCODING AND DECODING
WHEN BEACON IS SELECTED
ON, PLANE, WHEN
OF MODE SELECTED,
DISK, RANGE, SO, Q
WITH ENCODE, PLANE
LASER OPTION

C

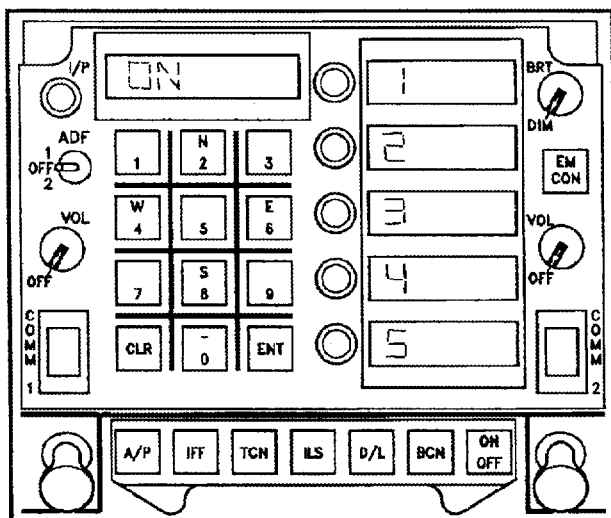
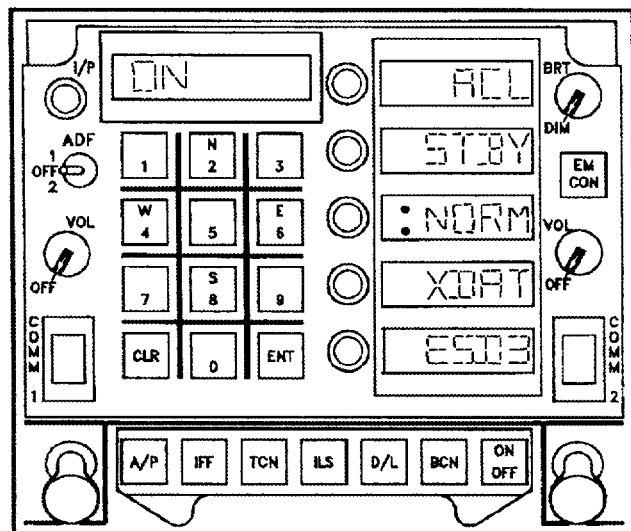


Figure 2. Cockpit Displays (Sheet 2)



RADAR BEACON DISPLAY

D
 IEM CON SELECTED
 DISRUPTANCE
 PREVENTING THE
 RADAR BEACON FROM
 TRANSMITTING.

EMISSION CONTROL DISPLAY

DISRUPTANCE
 SELECTED
 EMISSION CONTROL
 SWITCH AND RADAR
 BEACON RETURN TO
 NORMAL OPERATION.

E

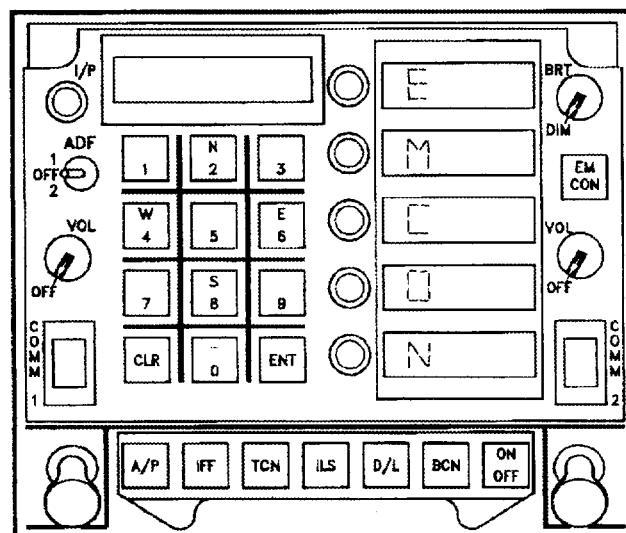


Figure 2. Cockpit Displays (Sheet 3)

ORGANIZATIONAL MAINTENANCE
TESTING AND TROUBLESHOOTING
TROUBLESHOOTING - FUNCTIONAL TEST
RADAR BEACON SYSTEM

This WP supersedes WP012 00, dated 1 August 1989.

Reference Material

Line Maintenance Access Doors A1-F18AC-LMM-010
Line Maintenance Procedures A1-F18AC-LMM-000

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Radar Beacon System Fault Codes Using Radar Beacon Test Set AN/APN-455, Table 4	6
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Test Set Display Indicates Fault Code DELY, Table 9	13
Test Set Display Indicates Fault Code POWR, Table 5	7
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Record of Applicable Technical Directives

None

Table 1. PWR IND Meter and REPLY Light Are Wrong

Support Equipment Required	
Part Number or Type Designation	Nomenclature
77/BN	Multimeter
Materials Required	
Specification or Part Number	Nomenclature
MS20995NC20	Lockwire

Table 1. PWR IND Meter and REPLY Light Are Wrong (Continued)

NOTE		
<p>Radar Beacon System Functional Schematic (A1-F18AC-630-500, WP006 00) may be used with this procedure.</p> <p>For locator, refer to WP013 00.</p> <p>Malfunction is caused by one of the items listed below:</p> <p>Aircraft Wiring Coax Cable Control-Converter Radar Receiver-Transmitter RT-1028/APN-202 X-Band Antenna AS-3017/APN</p>		
Procedure	No	Yes
NOTE		
<p>The question used in logic tree “Does continuity exist” means to test for the items listed below:</p> <ol style="list-style-type: none"> 1. Pin to pin test per procedural step. 2. Shorts to ground. 3. Shorts between surrounding pins on connectors. 4. Shorts between shield and conductors. 5. Shield continuity. 		
a. Do Radar Beacon System Built-In Test (WP009 00). Is BIT good?	b	c
b. Do indicated BIT troubleshooting	-	-
c. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Do Line/Antenna Return Loss and Insertion Loss (WP012 01).		
(3) Does antenna and coax cable test good?	d	e
d. Malfunction has been isolated to X-Band Antenna AS-3017/APN (A1-F18AC-630-300, WP010 00) or isolate defective coax cable (table 10, this WP, and (A1-F18A()-WDM-000). Do step h	-	-
e. Do the substeps below:		
(1) Open door 3 (A1-F18AC-LMM-010).		
(2) Disconnect 72P-A002B from Radar Receiver-Transmitter RT-1028/APN-202.		

Table 1. PWR IND Meter and REPLY Light Are Wrong (Continued)

Procedure	No	Yes
(3) Open door 13R (A1-F18AC-LMM-010).		
(4) Disconnect 82P-F001C from control-converter.		
(5) Does continuity exist from:		
72P-A002B pin H to 82P-F001C pin 103		
72P-A002B pin D to 82P-F001C pin 104		
72P-A002B pin J to 82P-F001C pin 101		
72P-A002B pin K to 82P-F001C pin 102?	f	g
f. Isolate defective aircraft wiring (A1-F18A()-WDM-000). Do step h	-	-
g. Malfunction has been isolated to Radar Receiver-Transmitter RT-1028/APN-202 (A1-F18AC-630-300, WP008 00), or Control-Converter (A1-F18AC-741-300, WP005 00). Do step h	-	-
h. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:		
(1) 72P-A002A (safety with lockwire)		
(2) 72P-A002B (safety with lockwire)		
(3) 72P-B004 (safety with lockwire)	-	-
(4) 82P-F001C	-	-
(5) Doors 3 and 13R	-	-

Table 2. REPLY Indicator Light Does Not Go Off

Support Equipment Required	
Part Number or Type Designation	Nomenclature
77/BN	Multimeter
Materials Required	
None	
NOTE	
Radar Beacon System Functional Schematic (A1-F18AC-630-500, WP006 00) may be used with this procedure.	
For locator, refer to WP013 00.	

Table 2. REPLY Indicator Light Does Not Go Off (Continued)

Malfunction is caused by one of the items listed below:		
Aircraft Wiring Control-Converter Radar Receiver-Transmitter RT-1028/APN-202		
Procedure	No	Yes
<p style="text-align: center;">NOTE</p> <p>The question used in logic tree “Does continuity exist” means to test for the items listed below:</p> <ol style="list-style-type: none"> 1. Pin to pin test per procedural step. 2. Shorts to ground. 3. Shorts between surrounding pins on connectors. 4. Shorts between shield and conductors. 5. Shield continuity. 		
a. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 3 (A1-F18AC-LMM-010).		
(3) Disconnect 72P-A002B from Radar Receiver-Transmitter RT-1028/APN-202.		
(4) Open door 13R (A1-F18AC-LMM-010).		
(5) Disconnect 82P-F001C from control-converter.		
(6) Does continuity exist from 82P-F001C pin 94 to 72P-A002B pin G?	b	c
b. Isolate defective aircraft wiring (A1-F18A()-WDM-000). Do step d	-	-
c. Malfunction has been isolated to Radar Receiver-Transmitter RT-1028/APN-202 (A1-F18AC-630-300, WP008 00) or Control-Converter (A1-F18AC-741-300, WP005 00). Do step d	-	-
d. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:		
(1) 72P-A002B		
(2) 82P-F001C		
(3) Doors 3 and 13R	-	-

Table 3. MOD TEST Light Does Not Come On


Support Equipment Required	
Part Number or Type Designation	Nomenclature
1502-4	Time Domain Reflectometer
74D420048-1001	TDR Adapter Kit
Materials Required	
Specification or Part Number	Nomenclature
MS20995NC20	Lockwire
NOTE	
Radar Beacon System Functional Schematic (A1-F18AC-630-500, WP006 00) may be used with this procedure.	
For locator, refer to WP013 00.	
Malfunction is caused by one of the items listed below:	
Coax Cable	
KA-Band Antenna AS-3362/APN	
KA-Band Waveguide Assembly or KA-Band Coax Cable/Waveguide Assembly	

Procedure	No	Yes
a. Do Radar Beacon System Built-In Test (WP009 00). Is BIT good?	b	c
b. Do indicated BIT troubleshooting	-	-
c. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 3 (A1-F18AC-LMM-010).		
(3) Disconnect 72P-B001A from Radar Receiver R-1623/APN.		
(4) Remove lockwire and disconnect 72P-A002D, 72P-A002F and 72P-A002G from Radar Receiver-Transmitter RT-1028/APN-202.		
(5) Using reflectometer (A1-F18AC-WRM-000, WP015 00), and table 10 (this WP), test coax cables from:		
72P-A002D to 72P-B001A pin 5		
72P-A002F to 72P-B001A pin 6		
72P-A002G to 72P-B001A pin 4		

Table 3. MOD TEST Light Does Not Come On (Continued)

Procedure	No	Yes
(6) Do coax cables test good?	d	e
d. Isolate defective coax cable (table 10, this WP, and A1-F18A()-WDM-000. Do step f	-	-
e. Malfunction has been isolated to KA-Band Antenna AS-3362/APN (A1-F18AC-630-300, WP011 00) KA-Band Waveguide Assembly or KA-Band Coax Cable/Waveguide Assembly (A1-F18AC-630-300, WP012 00). Do step f	-	-
f. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:		
(1) 72P-B001A		
(2) 72P-A002D (safety with lockwire)		
(3) 72P-A002F (safety with lockwire)		
(4) 72P-A002G (safety with lockwire)		
(5) Door 3	-	-

Table 4. Radar Beacon System Fault Codes Using Radar Beacon Test Set AN/APM-445

Fault Codes	Description	Remedy
FAIL	X-band antenna coupler may be positioned over null point in the X-Band Antenna AS-3017/APN radiation pattern.	<p>NOTE</p> <p>If the FAIL fault code still exists after two repositioning attempts, do table 1, this WP.</p> <p>Rotate X-band antenna coupler 1A2 around the X-band antenna 20 to 30 degrees clockwise or counterclockwise from the initial position and do the below:</p> <ol style="list-style-type: none"> 1. For radar beacon parameters, refer to WP011 02 and repeat procedures from step 4.a., 5.f. or 6.c., as required. 2. For ACLS parameters, refer to WP 011 02 and repeat procedures from step 7.g.
 1 CODE	Reply code spacing failed timing tests for select- ed code type.	Do table 1, this WP.

**Table 4. Radar Beacon System Fault Codes Using Radar Beacon
Test Set AN/APM-445 (Continued)**




Fault Codes	Description	Remedy
POWR	Reply power level at the X-band antenna failed to rise above the minimum acceptable output threshold of 50.8 dBm for radar beacon system or 47.0 dBm for All Weather carrier landing system (ACLS).	Do table 5, this WP.
FREQ	Measured reply frequency is not within ± 10 MHz of requested frequency of 9310 MHz.	Replace Radar Receiver-Transmitter RT-1028/ASN-202 (A1-F18AC-630-300, WP008 00).
RATE	Radar beacon system and ACLS respond to noise or false interrogation. Reply rate exceeded acceptable rate by more than 1.0%.	Do table 6, this WP.
SENS	Radar beacon system or ACLS failed to see low power interrogations used for sensitivity testing. Reply rate was too low by more than 1.0%. Radar beacon system or ACLS receiver did not satisfy required minimum observed signal level.	Do table 7, this WP.
 2 AMOD	Amplitude modulation on X-band reply did not indicate +0.5 to +1.2 dB.	Do table 8, this WP.
DELAY	Delay between KA-band interrogation and X-band reply is not within aircraft response delay tolerance.	Do table 7, this WP.
 1 APPLICABLE TO RADAR BEACON SYSTEM TROUBLESHOOTING ONLY.  2 APPLICABLE TO ACLS TROUBLESHOOTING ONLY.		

Table 5. Test Set Display Indicates Fault Code POWR

Support Equipment Required	
Part Number or Type Designation	Nomenclature
1502-4	Time Domain Reflectometer
74D420048-1001	TDR Adapter Kit
Materials Required	
Specification or Part Number	Nomenclature
MS20995NC20	Lockwire

Table 5. Test Set Display Indicates Fault Code POWR (Continued)

NOTE		
<p>Radar Beacon System Functional Schematic (A1-F18AC-630-500, WP006 00) may be used with this procedure.</p> <p>For locator, refer to WP013 00.</p> <p>Malfunction is caused by one of the items listed below:</p> <p>Coax Cable Radar Receiver R-1623/APN Radar Receiver-Transmitter RT-1028/APN-202 X-Band Antenna AS-3017/APN</p>		
Procedure	No	Yes
NOTE		
<p>The question used in logic tree "Does continuity exist" means to test for the items listed below:</p> <ol style="list-style-type: none"> 1. Pin to pin test per procedural step. 2. Shorts to ground. 3. Shorts between surrounding pins on connectors. 4. Shorts between shield and conductors. 5. Shield continuity. 		
a. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 3 (A1-F18AC-LMM-010).		
(3) Remove lockwire and disconnect 72P-A002A and 72P-A002G from Radar Receiver-Transmitter RT-1028/APN-202.		
(4) Disconnect 72P-B001A from Radar Receiver R-1623/APN.		
(5) Remove lockwire and disconnect 72P-B004 from X-Band Antenna AS-3017/APN.		
(6) Using reflectometer (A1-F18AC-WRM-000, WP015 00) and table 10 (this WP) test coax cable from:		
72P-B001A, pin 4 to 72P-A002G		
72P-A002A to 72P-B004		
b. Do coax cables test good?	c	d
c. Isolate defective coax cable (table 10, this WP, and A1-F18A()-WDM-000. Do step e	—	—

Table 5. Test Set Display Indicates Fault Code POWR (Continued)

Procedure	No	Yes
d. Malfunction has been isolated to X-Band Antenna AS-3017/APN (A1-F18AC-630-300, WP010 00), Radar Receiver R-1623/APN (A1-F18AC-630-300, WP009 00), or Radar Receiver-Transmitter RT-1028/APN-202 (A1-F18AC-630-300, WP008 00). Do step e	—	—
e. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:		
(1) 72P-A002G, 72P-A002A, and 72P-B004 (safety with lockwire), 72P-B001A.		
(2) Door 3	—	—

Table 6. Test Set Display Indicates Fault Code RATE

<p style="text-align: center;">Support Equipment Required</p> <p style="text-align: center;">None</p> <p style="text-align: center;">Materials Required</p> <p style="text-align: center;">None</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Radar Beacon System Functional Schematic (A1-F18AC-630-500, WP006 00) may be used with this procedure.</p> <p style="text-align: center;">For locator, refer to WP013 00.</p> <p>Malfunction is caused by one of the items listed below:</p> <p style="margin-left: 40px;">Radar Receiver R-1623/APN Radar Receiver-Transmitter RT-1028/APN-202</p>		
Procedure	No	Yes
a. Do Radar Beacon System Built-In Test (WP009 00). Is BIT good?	b	c
b. Do indicated BIT troubleshooting	—	—
c. Is testing being done in line of sight of the SPN-42/46 or on the aircraft carrier flight deck during recovery operations?	d	e
d. Malfunction has been isolated to Radar Receiver R-1623/APN (A1-F18AC-630-300, WP009 00), or Radar Receiver-Transmitter RT-1028/APN-202 (A1-F18AC-630-300, WP008 00).	—	—
e. Do testing out of line of sight of the SPN-42/46 or when aircraft carrier flight deck recovery operations are not in progress	—	—

Table 7. Test Set Display Indicates Fault Code SENS

Support Equipment Required

Part Number or Type Designation

Nomenclature

1502-4

74D420048-1001

Time Domain Relfectometer

TDR Adapter Kit

Materials Required

Specification or Part Number

Nomenclature

MS20995NC20

Lockwire

NOTE

Radar Beacon System Functional Schematic (A1-F18AC-630-500, WP006 00) may be used with this procedure.

For locator, refer to WP013 00.

Malfunction is caused by one of the items listed below:

Coax Cable

KA-Band Antenna AS-3362/APN

KA-Band Waveguide Assembly or KA-Band Coax-Cable/Waveguide Assembly

Radar Receiver R-1623/APN

Radar Receiver-Transmitter RT-1028/APN-202

X-Band Antenna AS-3017/APN

Procedure	No	Yes
a. Do Radar Beacon System Built-In Test (WP009 00). Is BIT good?	b	c
b. Do indicated BIT troubleshooting	-	-
c. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 3 (A1-F18AC-LMM-010).		
(3) Disconnect 72P-B001A from Radar Receiver R-1623/APN.		
(4) Remove lockwire and disconnect 72P-A002D, 72P-A002F, 72P-A002G, and 72P-A002A from Radar Receiver-Transmitter RT-1028/APN-202.		
(5) Remove lockwire and disconnect 72P-B004 from X-Band Antenna AS-3017/APN.		

Table 7. Test Set Display Indicates Fault Code SENS (Continued)

Procedure	No	Yes
<p>(6) Using reflectometer (A1-F18AC-WRM-000, WP015 00), and table 10 (this WP), test coax cables from:</p> <p>72P-A002D to 72P-B001A pin 5 72P-A002F to 72P-B001A pin 6 72P-A002G to 72P-B001A pin 4 72P-A002A to 72P-B004</p>		
(7) Do coax cables test good?	d	e
d. Isolate defective coax cable (table 10, this WP, and A1-F18A()-WDM-000). Do step f	—	—
<p>e. Malfunction has been isolated to KA-Band Antenna AS-3362/APN (A1-F18AC-630-300, WP011 00), KA-Band Waveguide Assembly or KA-Band Coax Cable/Waveguide Assembly (A1-F18AC-630-300, WP012 00), X-Band Antenna AS-3017/APN (A1-F18AC-630-300, WP010 00), Radar Receiver-Transmitter RT-1028/APN-202 (A1-F18AC-630-300, WP008 00), or Radar Receiver R-1623/APN, (A1-F18AC-630-300, WP 009 00). Do step f</p>	—	—
<p>f. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:</p> <p>(1) 72P-B001A</p> <p>(2) 72P-A002D (safety with lockwire)</p> <p>(3) 72P-A002F (safety with lockwire)</p> <p>(4) 72P-A002G (safety with lockwire)</p> <p>(5) 72P-A002A (safety with lockwire)</p> <p>(6) 72P-B004 (safety with lockwire)</p> <p>(7) Door 3</p>	—	—

Table 8. Test Set Display Indicates Fault Code AMOD

Support Equipment Required		
Part Number or Type Designation	Nomenclature	
1502-4	Time Domain Relfectometer	
74D420048-1001	TDR Adapter Kit	
Materials Required		
Specification or Part Number	Nomenclature	
MS20995NC20	Lockwire	
NOTE		
Radar Beacon System Functional Schematic (A1-F18AC-630-500, WP006 00) may be used with this procedure.		
For locator, refer to WP013 00.		
Malfunction is caused by one of the items listed below:		
Coax Cable		
KA-Band Antenna AS-3362/APN		
KA-Band Waveguide Assembly or KA-Band Coax-Cable/Waveguide Assembly		
Radar Receiver R-1623/APN		
Radar Receiver-Transmitter RT-1028/APN-202		
Procedure	No	Yes
a. Do Radar Beacon System Built-In Test (WP009 00). Is BIT good?	b	c
b. Do indicated BIT troubleshooting	-	-
c. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 3 (A1-F18AC-LMM-010).		
(3) Disconnect 72P-B001A from Radar Receiver R-1623/APN.		
(4) Remove lockwire and disconnect 72P-A002G from Radar Receiver-Transmitter RT-1028/APN-202.		
(5) Using reflectometer (A1-F18AC-WRM-000, WP015 00), and table 10 (this WP), test coax cables from:		
72P-A002G to 72P-B001A pin 9		

Table 8. Test Set Display Indicates Fault Code AMOD (Continued)

Procedure	No	Yes
(7) Do coax cables test good?	d	e
d. Isolate defective coax cable (table 10, this WP, and A1-F18A()-WDM-000). Do step f	—	—
e. Malfunction has been isolated to KA-Band Antenna AS-3362/APN (A1-F18AC-630-300, WP011 00), KA-Band Waveguide Assembly or KA-Band Coax Cable/Waveguide Assembly (A1-F18AC-630-300, WP012 00), Radar Receiver-Transmitter RT-1028/APN-202 (A1-F18AC-630-300, WP008 00) or Radar Receiver R-1623/APN, (A1-F18AC-630-300, WP009 00). Do step f	—	—
f. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:		
(1) 72P-B001A (safety with lockwire)		
(2) 72P-A002G (safety with lockwire)		
(3) Door 3	—	—

Table 9. Test Set Display Indicates Fault Code DELY

Support Equipment Required	
Part Number or Type Designation	Nomenclature
1502-4	Time Domain Reflectometer
74D420048-1001	TDR Adapter Kit
Materials Required	
Specification or Part Number	Nomenclature
MS20995NC20	Lockwire
NOTE	
Radar Beacon System Functional Schematic (A1-F18AC-630-500, WP006 00) may be used with this procedure.	
For locator, refer to WP013 00.	

Table 9. Test Set Display Indicates Fault Code DELY (Continued)

Malfunction is caused by one of the items listed below:		
Coax Cable KA-Band Antenna AS-3362/APN KA-Band Waveguide Assembly or KA-Band Coax-Cable/Waveguide Assembly Radar Receiver R-1623/APN Radar Receiver-Transmitter RT-1028/APN-202		
Procedure	No	Yes
a. Do Radar Beacon System Built-In Test (WP009 00). Is BIT good?	b	c
b. Do indicated BIT troubleshooting	-	-
c. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Open door 3 (A1-F18AC-LMM-010).		
(3) Disconnect 72P-B001A from Radar Receiver R-1623/APN.		
(4) Remove lockwire and disconnect 72P-A002D and 72P-A002F from Radar Receiver-Transmitter RT-1028/APN-202.		
(5) Using reflectometer (A1-F18AC-WRM-000, WP015 00), and table 10 (this WP), test coax cables from:		
72P-A002D to 72P-B001A pin 5		
72P-A002F to 72P-B001A pin 6		
(7) Do coax cables test good?	d	e
d. Isolate defective coax cable (table 10, this WP, and A1-F18A()-WDM-000). Do step f	-	-
e. Malfunction has been isolated to KA-Band Antenna AS-3362/APN (A1-F18AC-630-300, WP011 00), KA-Band Waveguide Assembly or KA-Band Coax Cable/Waveguide Assembly (A1-F18AC-630-300, WP012 00), Radar Receiver-Transmitter RT-1028/APN-202 (A1-F18AC-630-300, WP008 00) or Radar Receiver R-1623/APN, (A1-F18AC-630-300, WP009 00). Do step f	-	-
f. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:		
(1) 72P-B001A		
(2) 72P-A002D		

Table 9. Test Set Display Indicates Fault Code DELY (Continued)

Procedure	No	Yes
(3) 72P-A002F (safety with lockwire)		
(4) Door 3	—	—

Table 10. Radar Beacon System Coax Cable Parameters

Cable Number	Connector	Impedance (Ohms)	Dielectric Type	Maximum Millirho	Cable Length (Inches)
TQ8A	72P-B001A pin 4 to 72P-A002G	95	PTFE	± 100	13
TQ6A	72P-B001A pin 5 to 72P-A002D	95	PTFE	± 100	13
TQ7A	72P-B001A pin 6 to 72P-A002F	95	PTFE	± 100	13
TQ4A	72P-A002A to 72P-B004	95	PTFE	± 100	51

ORGANIZATIONAL MAINTENANCE

TESTING AND TROUBLESHOOTING

TESTING - LINE/ ANTENNA RETURN LOSS AND INSERTION LOSS

RADAR BEACON SYSTEM

This WP supersedes WP012 01, dated 1 August 1989

Reference Material

Line Maintenance Procedures	A1-F18AC-LMM-000
Line Maintenance Access Doors	A1-F18AC-LMM-010
Data Link, Instrument Landing and Radar, Beacon Systems	A1-F18AC-630-200
Line/Antenna Return Loss and Insertion Loss Setup	WP007 01
Data Link, Instrument Landing and Radar Beacon Systems	A1-F18AC-630-300
X-Band Antenna AS-3017/APN	WP010 00

Alphabetical Index

Subject	Page No.
Line/Antenna Return Loss and Insertion Loss, Table 1	1

Record of Applicable Technical Directives

None

Table 1. Line/Antenna Return Loss and Insertion Loss

Procedure	Normal Indication	Remedy for Abnormal Indication
System Required Components		
X-Band Antenna Components.		
Support Equipment Required		
None		
Materials Required		
Specification or Part Number	Nomenclature	
MS20995NC20	Lockwire	

Table 1. Line/Antenna Return Loss and Insertion Loss (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p align="center">NOTE</p> <p align="center">For locator refer to WP013 00.</p>		
<p>1. PRELIMINARY.</p> <p>a. Make sure electrical power is off (A1-F18AC-LMM-000).</p> <p>b. Open door 3 (A1-F18AC-LMM-010).</p> <p>c. On Radar Receiver-Transmitter, disconnect 72P-A002A from J1.</p> <p>d. On X-Band Antenna, disconnect 72P-B004.</p> <p>e. Do Initial Setup (WP007 01).</p> <p>2. INSERTION LOSS TEST.</p>		
<p align="center">NOTE</p> <p align="center">Sweep frequency for Radar Beacon System - 9.1 GHz to 9.4 GHz</p>		
<p>a. Do Insertion Loss Setup using 7mm to TNC adapters connected to directional couplers (channel R and channel B) (WP007 01).</p> <p>b. Do Recorder Reference Line Recording for Radar Beacon System insertion loss (WP007 01).</p> <p>c. Remove 7mm to TNC adapter on directional coupler (channel R).</p> <p>d. Install 7mm to N adapter on directional coupler (channel R).</p> <p>e. Connect 72P-B004 (N male) to directional coupler (channel R) and 72P-A002A (TCN male) to directional coupler (channel B).</p>		

Table 1. Line/Antenna Return Loss and Insertion Loss (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>f. Do Measurement Recording (WP007 01).</p> <p>g. Disconnect 72P-B004 and 72P-A002A from directional couplers (channel R and channel B).</p> <p>3. RETURN LOSS TEST.</p> <p>a. Do Return Loss Setup (WP007 01).</p> <p>b. Do Recorder Reference Line Recording for Radar Beacon System return loss (WP007 01).</p> <p>c. Remove precision termination (50 ohm) from 7mm to TNC adapter on directional coupler (channel A).</p> <p>d. Remove 7mm to TNC adapter from directional coupler (channel A).</p> <p>e. Install 7mm to N adapter on directional coupler (channel A).</p> <p>f. Remove X-Band Antenna (A1-F18AC-630-300), WP010 00).</p> <p>g. Connect X-Band Antenna to 7mm to N adapter on directional coupler (channel A).</p>	<p>On 161353 THRU 161528, insertion loss measurement is not greater than 1.1 dB.</p> <p>On 161702 AND UP, insertion loss measurement is not greater than 1.6 dB.</p>	<p>Visually inspect connectors and cable for damage and do applicable replacement procedure in A1-F18AC-WRM-000:</p> <p>72P-A002A-WP031 00 72P-B004 - WP029 00</p> <p>Coax Cable - WP015 00.</p>
<p style="text-align: center;">NOTE</p> <p>When testing X-Band Antenna, make sure antenna is not within 5 feet of any metal object.</p>		
<p>h. Do Measurement Recording (WP007 01).</p>	<p>Return loss measurement is not less than 9.6 dB.</p>	<p>Replace X-Band Antenna (A1-F18AC-630-300, WP010 00).</p>

Table 1. Line/Antenna Return Loss and Insertion Loss (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>i. Disconnect X-Band Antenna from directional coupler (channel A).</p> <p>4. FINAL.</p> <p>a. If this is last test, do shutdown (WP007 01).</p> <p>b. Install X-Band Antenna (A1-F18AC-630-300, WP010 00).</p> <p>c. Connect connector 72P-A002A to Radar Receiver-Transmitter. Safety with lockwire.</p> <p>d. Close door 3 (A1-F18AC-LMM-010).</p>		

ORGANIZATIONAL MAINTENANCE
TESTING AND TROUBLESHOOTING
LOCATOR
RADAR BEACON SYSTEM

Reference Material

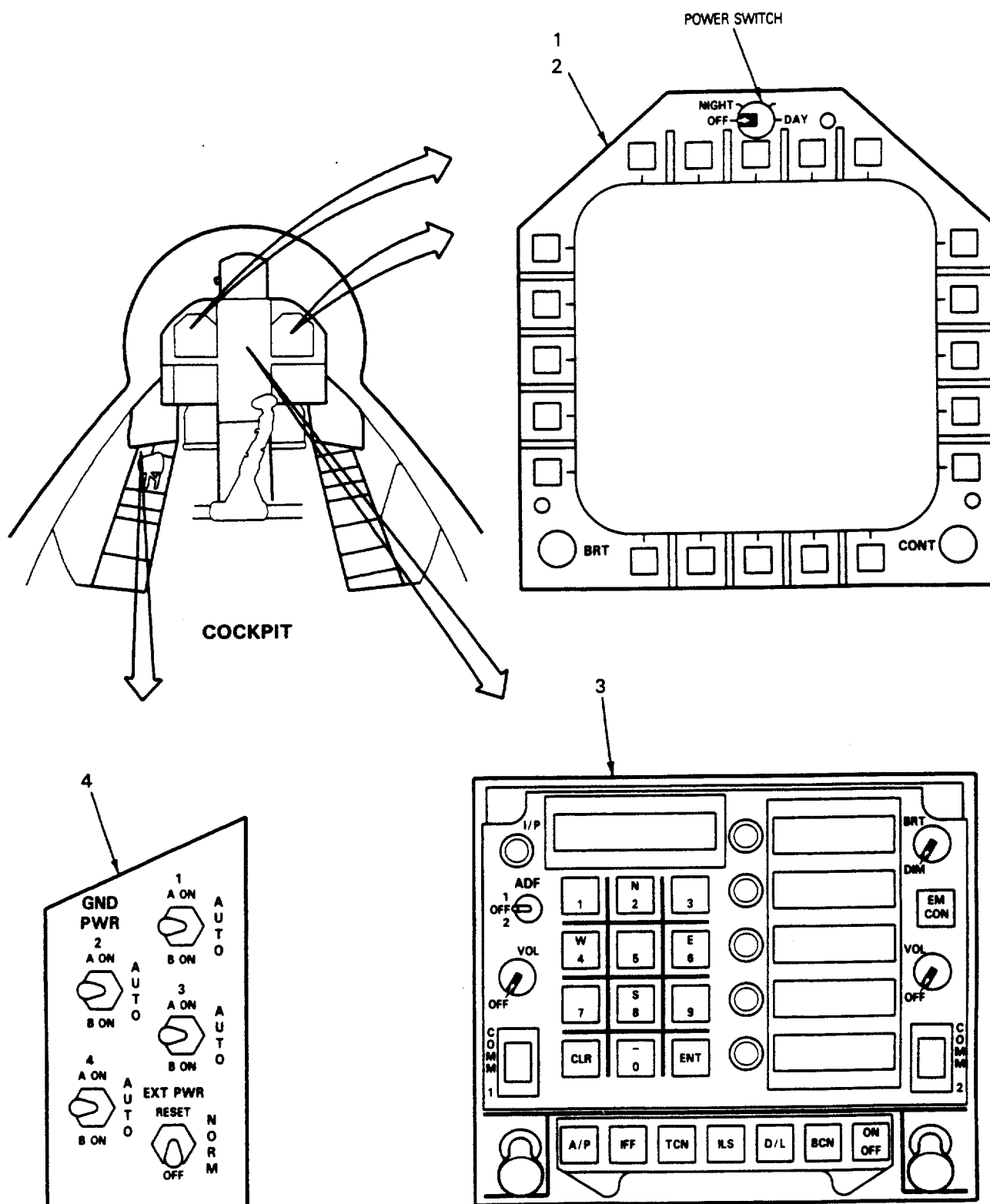
None

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Subject	Page No.
Radar Beacon System Locator, Figure 1	2

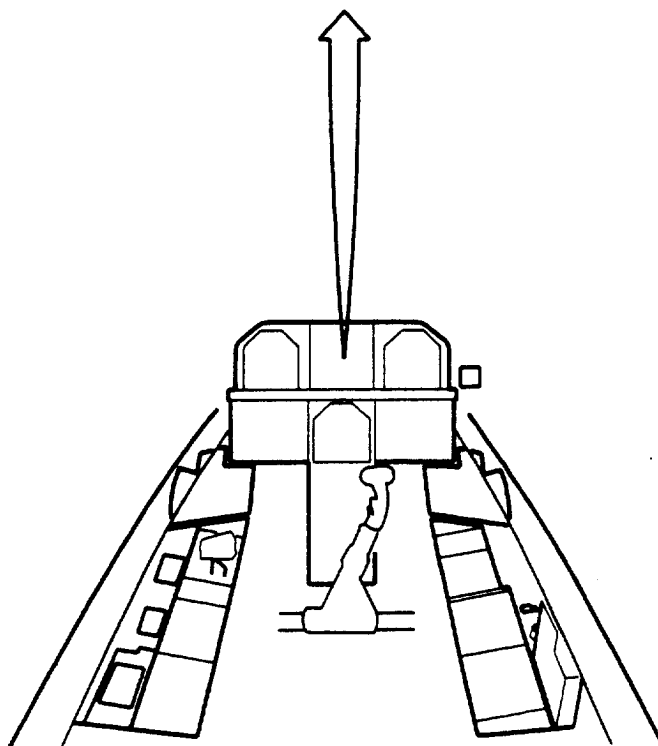
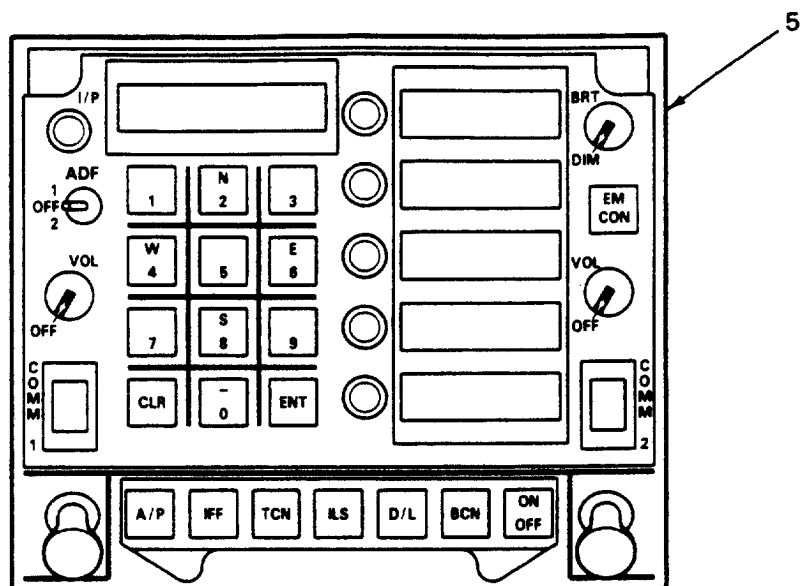
Record of Applicable Technical Directives

None



18AC-630-20-(8-1)13-CAT I

Figure 1. Radar Beacon System Locator (Sheet 1)



REAR COCKPIT

Figure 1. Radar Beacon System Locator (Sheet 2)

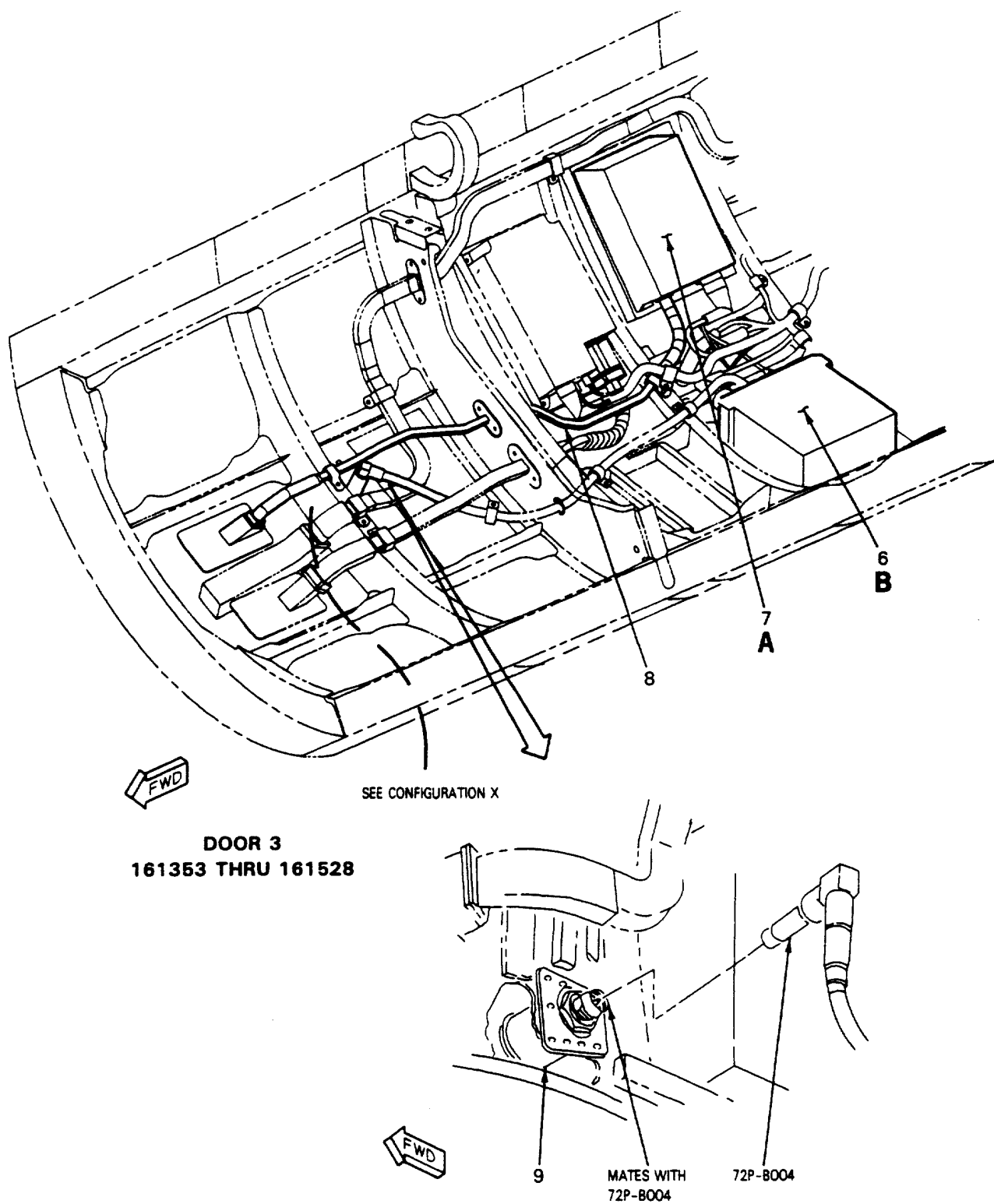
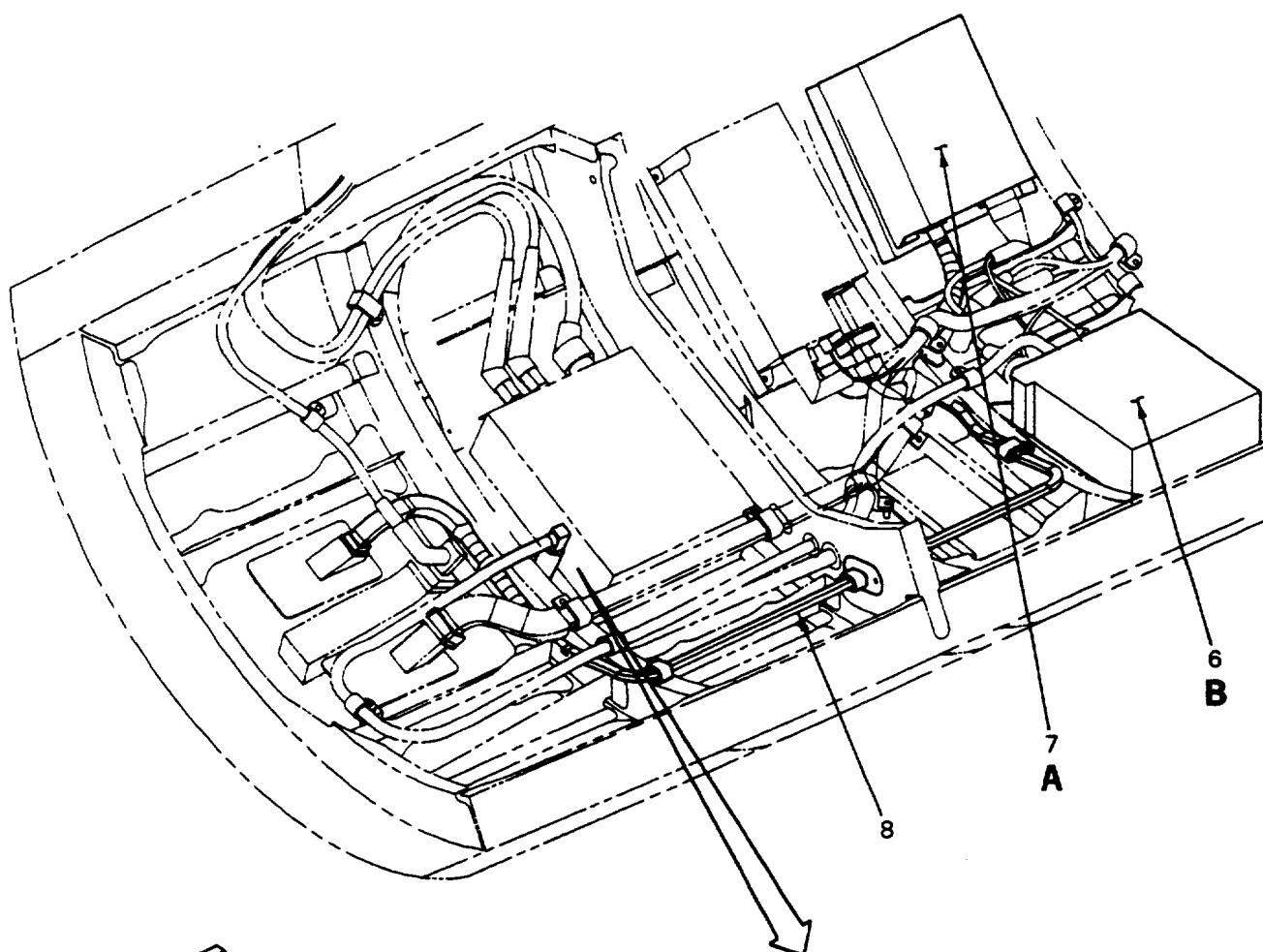
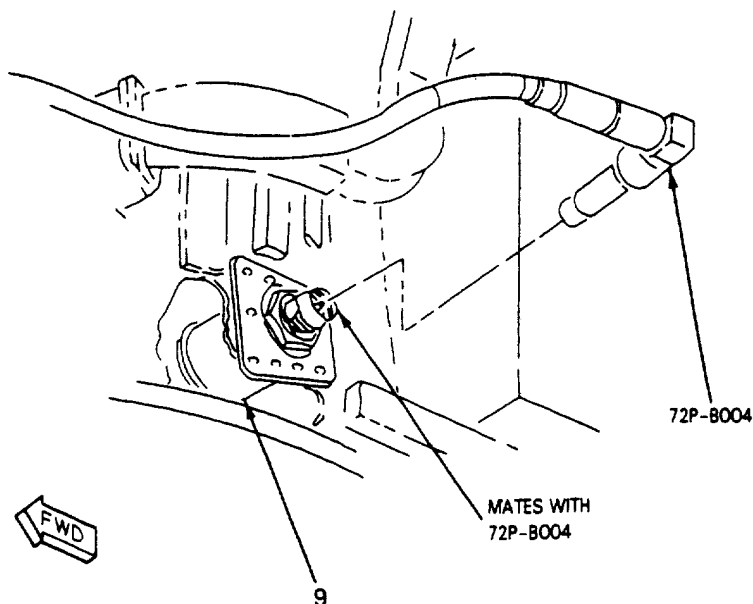


Figure 1. Radar Beacon System Locator (Sheet 3)

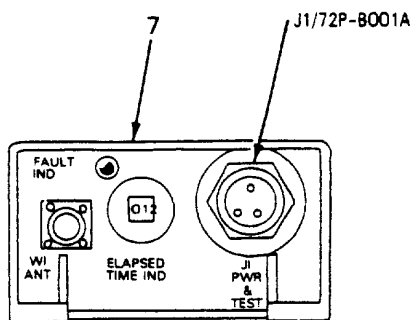


**DOOR 3
161702 AND UP
CONFIGURATION X**

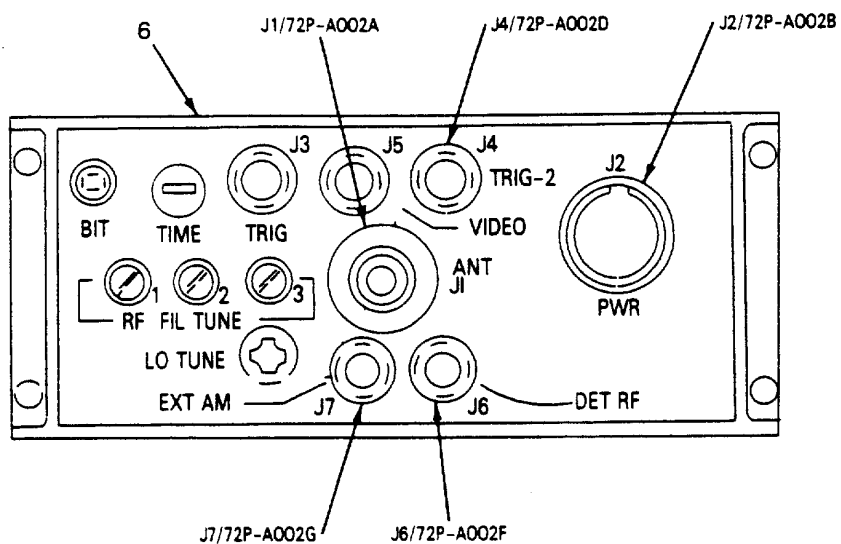


18AC-630-20-(8-4)13-CATT

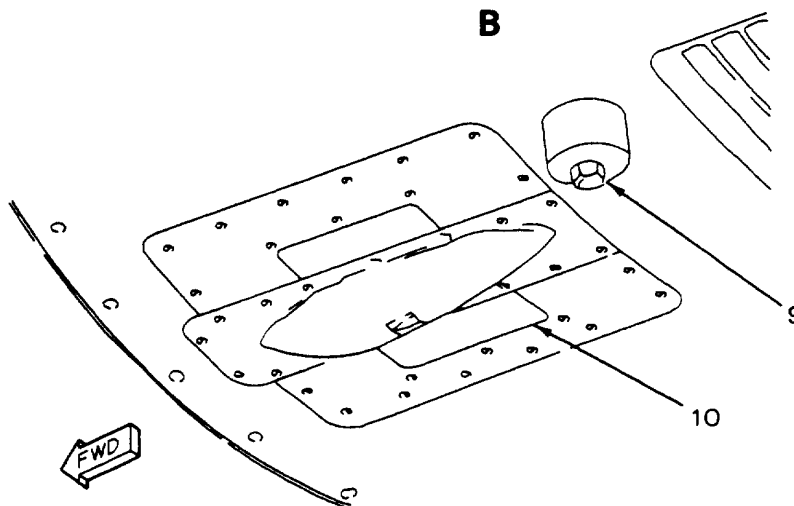
Figure 1. Radar Beacon System Locator (Sheet 4)



A



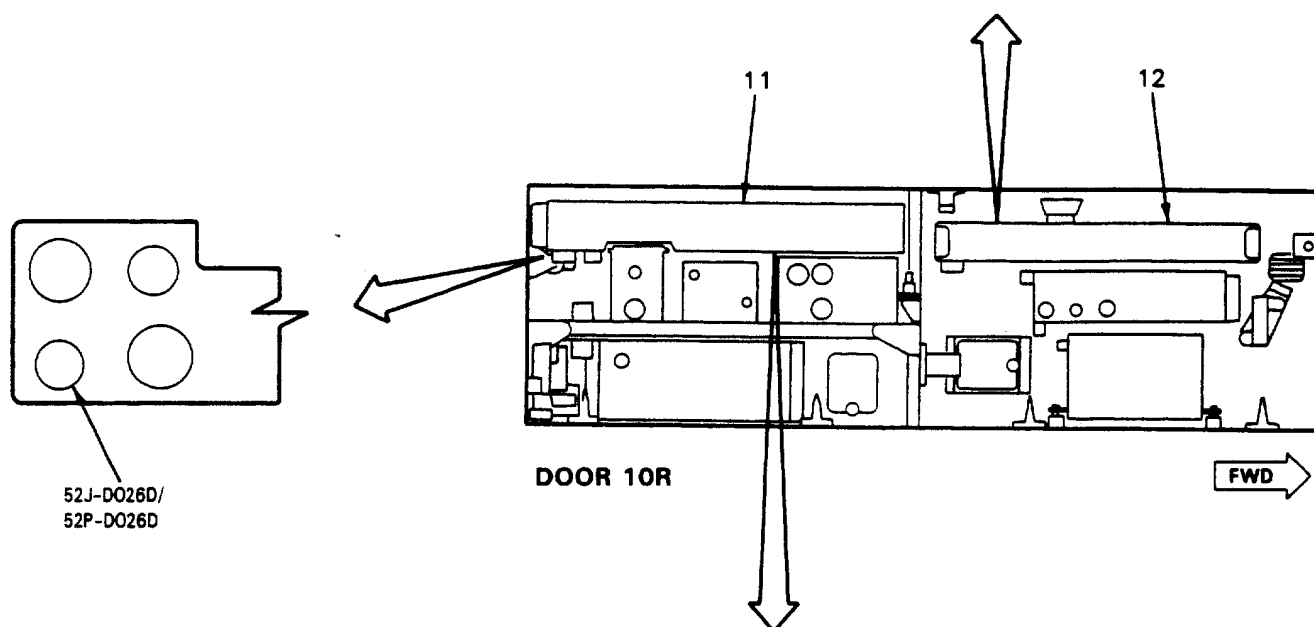
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DOOR 3

Figure 1. Radar Beacon System Locator (Sheet 5)

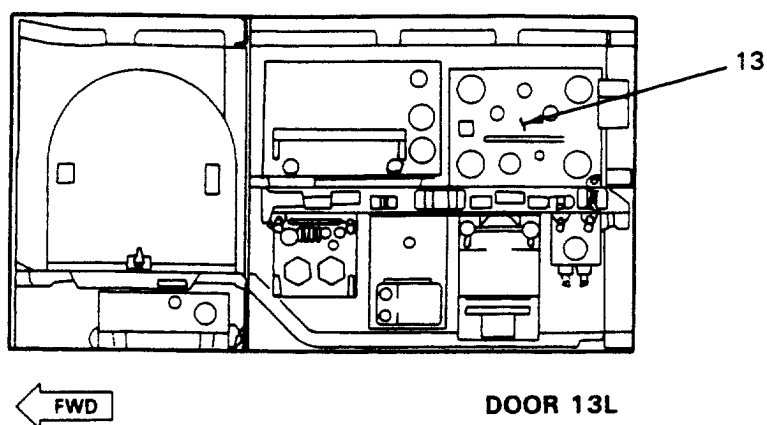
52A-D024				NO. 2 CIRCUIT BREAKER PANEL ASSEMBLY			
ZONE		REF DES		NOMENCLATURE		BUS	
2	A11	80CBDO07	MFD			R 115VAC	Ø A
3	A11	82CBDO02	CSC			R 115VAC	Ø A
2	A12	83CBDO09	MISSION CMPTR NO. 2			R 115VAC	Ø A
3	A17	80CBDO07	MFD			R 115VAC	Ø A
3	A18	83CBDO09	MISSION CMPTR NO. 2			R 115VAC	Ø A
3	B11	82CBDO03	CSC			R 115VAC	Ø B
2	B11	80CBDO06	MFD			R 115VAC	Ø B
2	B12	83CBDO10	MISSION CMPTR NO. 2			R 115VAC	Ø B
3	B17	80CBDO08	MFD			R 115VAC	Ø B
3	B18	83CBDO10	MISSION CMPTR NO. 2			R 115VAC	Ø B
2	C11	80CBDO09	MFD			R 115VAC	Ø C
3	C11	82CBDO09	CSC			R 115VAC	Ø C
2	C12	83CBDO11	MISSION CMPTR NO. 2			R 115VAC	Ø C
3	D7	80CBDO09	MFD			R 115VAC	Ø C
3	D8	83CBDO11	MISSION CMPTR NO. 2			R 115VAC	Ø C



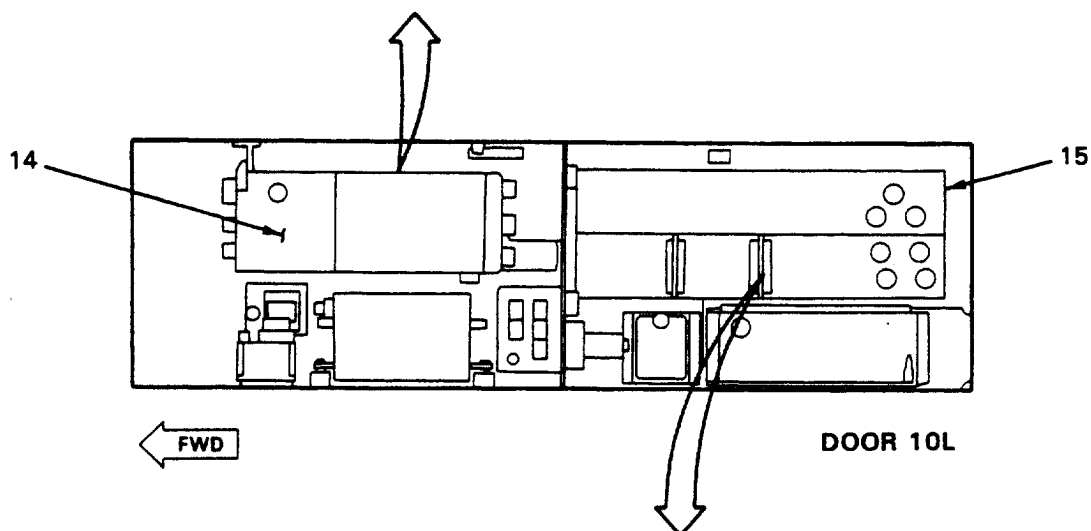
52A-D026				NO. 4 CIRCUIT BREAKER PANEL ASSEMBLY			
ZONE		REF DES		NOMENCLATURE		BUS	
3	B3	82CBDO05	CSC				R 28VDC
2	B12	82CBC005	CSC				R 28VDC
3	C1	72CBDO07	BEACON R/T AUG				R 28VDC
2	C7	82CBC004	CSC				R 115VAC Ø C
2	C8	82CBC003	CSC				R 115VAC Ø B
2	C9	82CBC002	CSC				R 115VAC Ø A
2	C14	72CBDO07	BEACON R/T AUG				R 28VDC

18AC-630-20-(8-6)13-CATI

Figure 1. Radar Beacon System Locator (Sheet 6)



52A-C159 NO. 8 CIRCUIT BREAKER/RELAY PANEL ASSEMBLY			
ZONE	REF DES	NOMENCLATURE	BUS
D2	85CBC004	MSDRS	MAINT 24/28VDC



52A-C057 NO. 7 CIRCUIT BREAKER/RELAY PANEL ASSEMBLY			
ZONE	REF DES	NOMENCLATURE	BUS
A20	83CBC006	MISSION COMP NO. 1	L 115VAC Ø A
B20	83CBC007	MISSION COMP NO. 1	L 115VAC Ø B
C20	83CBC008	MISSION COMP NO. 1	L 115VAC Ø C

Figure 1. Radar Beacon System Locator (Sheet 7)

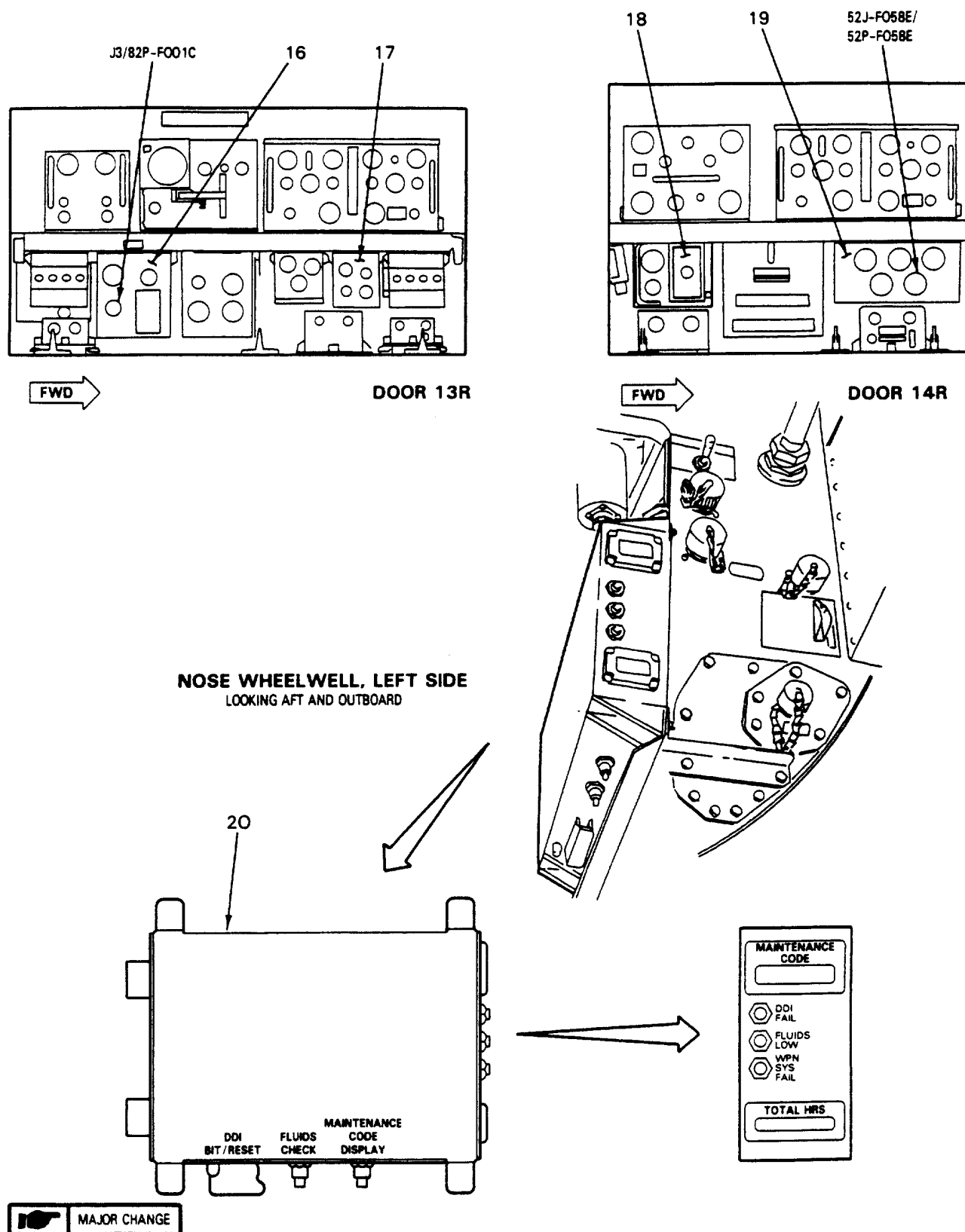


Figure 1. Radar Beacon System Locator (Sheet 8)

Nomenclature	Index No.	Ref Des
CONTROL-CONVERTER C-10382/A	16	82A-F001
DIGITAL DATA COMPUTER NO. 1	13	83A-E001
DIGITAL DISPLAY INDICATOR ID-2150/ASM-612	20	85A-G003
ELECTRONIC EQUIPMENT CONTROL C-10380/ASQ	3	79A-J006
GND PWR CONTROL PANEL ASSEMBLY	4	1A-H004
INTERFERENCE BLANKER MX-9965/A	17	66A-F001
KA-BAND ANTENNA AS-3362/APN	10	72E-B003
KA-BAND COAX CABLE/WAVEGUIDE ASSEMBLY	8	72W-B502
KA-BAND WAVEGUIDE ASSEMBLY	8	72W-B501
LEFT DIGITAL DISPLAY INDICATOR TP-1317/A	1	80A-H001
NO. 2 CIRCUIT BREAKER PANEL ASSEMBLY	12	52A-D024
NO. 2 RELAY PANEL ASSEMBLY	19	52A-F058
NO. 4 CIRCUIT BREAKER PANEL ASSEMBLY	11	52A-D026
NO. 7 CIRCUIT BREAKER/RELAY PANEL ASSEMBLY	15	52A-C057
NO. 8 CIRCUIT BREAKER/RELAY PANEL ASSEMBLY	14	52A-C159
RADIO RECEIVER R-1623/APN	7	72REB001
RADAR RECEIVER-TRANSMITTER RT-1028/APN-202	6	72A-A002
REAR ELECTRONIC EQUIPMENT CONTROL C-10380/ASQ	5	76A-L028
RIGHT DIGITAL DISPLAY INDICATOR IP-1317/A	2	80A-J002

Figure 1. Radar Beacon System Locator (Sheet 9)

Nomenclature	Index No.	Ref Des
SIGNAL DATA RECORDER RO-508/ASM-612	18	85A-F001
X-BAND ANTENNA AS-3017/APN	9	72E-B004
LEGEND 1. AIRCRAFT DOOR LOCATIONS ARE SHOWN IN A1-F18A()-WDM-000. <div><div>2</div> 161353 THRU 161359.</div> <div><div>3</div> 161360 AND UP.</div>		

Figure 1. Radar Beacon System Locator (Sheet 10)

ORGANIZATIONAL MAINTENANCE
TESTING AND TROUBLESHOOTING
TESTING - FUNCTIONAL TEST
DATA LINK SYSTEM

Reference Material

Line Maintenance Procedures	A1-F18AC-LMM-000
Data Link, Instrument Landing, and Radar Beacon Systems	A1-F18AC-630-200
Data Link System Locator	WP016 00

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Data Link System Cockpit Displays, Figure 3	26
Data Link System Functional Test, Table 2	10
Data Link System Test Set Hookup, Figure 2	25
Excessive VSWR Code Reset, Table 1	2
Illustrated Parts Breakdown	22
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Parts List	24
Introduction	1

Record of Applicable Technical Directives

None

1. INTRODUCTION.

2. If Band Pass Filter, Antenna (upper or lower aft) have been replaced or coaxial cable associated with

data link system rf circuit has been repaired, do table 1 to clear excessive VSWR code in Receiver-Transmitter-Processor.

Table 1. Excessive VSWR Code Reset

Procedure	Normal Indication	Remedy for Abnormal Indication										
<div>System Required Components</div> <div>Band Pass Filter F-1472/ARC Receiver-Transmitter-Processor RT-1379()/ASW</div> <div>Related Systems Required</div> <div>Avionics Cooling System Electrical System Intercommunication and Audio System Maintenance Status Display and Recording System Mission Computer System Multipurpose Display Group VHF/UHF Communication System</div> <div>Support Equipment Required</div> <table><tr><th>Part Number or Type Designation</th><th>Nomenclature</th></tr><tr><td>SM-511A/ASW</td><td>Digital Data Simulator</td></tr><tr><td>ID-1956/ASW</td><td>Indicator-Monitor</td></tr><tr><td>1361A</td><td>Connector Adapter</td></tr><tr><td>74D420039-1001</td><td>F-18 Utility Power Adapter</td></tr></table> <div>Materials Required</div> <div>None</div> <div>NOTE</div> <div>For locator, refer to WP016 00.</div> <div>If a malfunction occurs during this test, make sure circuit breakers shown in WP016 00 are closed.</div>			Part Number or Type Designation	Nomenclature	SM-511A/ASW	Digital Data Simulator	ID-1956/ASW	Indicator-Monitor	1361A	Connector Adapter	74D420039-1001	F-18 Utility Power Adapter
Part Number or Type Designation	Nomenclature											
SM-511A/ASW	Digital Data Simulator											
ID-1956/ASW	Indicator-Monitor											
1361A	Connector Adapter											
74D420039-1001	F-18 Utility Power Adapter											
<div>1. PRELIMINARY.</div> <div>a. Connect intercommunication equipment (A1-F18AC-LMM-000).</div> <div>b. On F/A-18A, do the substeps below:</div> <div>(1) Remove EMI cover assembly (A1-F18AC-LMM-000).</div>												

Table 1. Excessive VSWR Code Reset (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>(2) Open address switch access door on Receiver-Transmitter-Processor RT-1379()/ASW, read and record address switch settings.</p> <p>(3) Close address switch access door.</p> <p>(4) Install EMI cover assembly (A1-F18AC-LMM-000).</p> <p>c. On F/A-18B, do the substeps below:</p> <p>(1) Unfasten fasteners and remove panel (1, fig 1).</p> <p>(2) Open address switch access door on Receiver-Transmitter-Processor RT-1379()/ASW, read and record address switch settings.</p> <p>(3) Close address switch access door.</p> <p>(4) Install panel (1) and secure with fasteners.</p> <p>d. Position Digital Data Simulator SM-511A/ASW (SM-511A) in line of sight of Antenna AS-3557/A (upper UHF antenna).</p>		
<p style="text-align: center;">NOTE</p> <p>For best performance, the SM-511A antenna must be mounted vertically regardless of SM-511A test set operating position.</p> <p>For correct grounding, the SM-511A antenna mounting bracket must be inserted into one of the two unpainted triangular openings in the feet located around the SM-511A case.</p>		

Table 1. Excessive VSWR Code Reset (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>e. Slide the SM-511A antenna mounting bracket into the vertically oriented and unpainted foot of the SM-511A case.</p> <p>f. Connect the SM-511A antenna cable connector to J1 LOW PWR XMTR PWR jack of the SM-511A using coaxial adapter (fig 2).</p> <p>g. On SM-511A, connect P1 of power cable W1 to J11 PWR jack (fig 2).</p> <p>h. Connect P2 of power cable W1 to 115vac, 400 Hz receptacle on F-18 utility power adapter (fig 2).</p> <p>i. On Indicator-Monitor ID-1956/ASW (ID-1956 test set), connect P2 of power cable W5 to J5 POWER jack (fig 2).</p> <p>j. Connect P1 of power cable W5 to 115vac, 400 Hz receptacle on F-18 utility power adapter (fig 2).</p> <p>k. Connect P1 of receiver data cable W1 to J1 RCVR DATA jack (fig 2).</p> <p>l. Connect P2 of receiver data cable W1 to J12 RCVR OUTPUT jack of SM-511A (fig 2).</p> <p>m. Connect F-18 utility power adapter to aircraft (A1-F18AC-LMM-000).</p> <p>n. Apply electrical power (A1-F18AC-LMM-000).</p>		

Table 1. Excessive VSWR Code Reset (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>o. On ID-1956 test set, set A/C ADDRESS switches to address recorded in step 1b or 1c.</p> <p>p. Set MONITOR MODE switch to R-MSG.</p> <p>q. Set DISPLAY UPDATE/HOLD switch to UPDATE.</p> <p>r. Set ON/OFF switch to ON.</p> <p>s. Press CLEAR pushbutton switch, then RESET pushbutton switch.</p> <p>t. On SM-511A, set POWER ON/OFF switch to ON. Allow 10 minute warmup.</p> <p>u. Set RCVR FREQ and XMTR FREQ switches to assigned test frequency (300-324.9 MHz).</p> <p>v. Set ACFT ADDRESS switches to address recorded in step 1b or 1c.</p> <p>w. Set DATA SOURCE switch to GND.</p> <p>x. Set MSG SPACING switch to 16 MSEC.</p> <p>y. Rotate HIGH PWR CAL and LOW PWR CAL controls fully ccw.</p> <p>z. Set XMTR POWER HIGH/LOW switch to LOW.</p> <p>aa. Set MONITOR FUNCTION switch to LOW PWR.</p>	<p>POWER light comes on.</p> <p>POWER light comes on.</p>	

Table 1. Excessive VSWR Code Reset (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>ab. Set RANGE HIGH/LOW switch to LOW.</p> <p>ac. Rotate LOW PWR CAL control cw until meter pointer on RF/DATA MONITOR meter is in approximate center of green area.</p> <p>ad. Set RF ATTEN control to 0 dB.</p> <p>ae. Set controls as listed below:</p> <p>DATA SOURCE to DIAL MSG MIX to EVEN/ODD MSG SPACING to 96 MSEC</p> <p>af. On even label message block, set switches as listed below:</p> <p>CANCEL REPLY/REPLY to REPLY (down position) EVEN LABEL switch 16 (bit 28) to 0. EVEN LABEL switch 8 (bit 29) to 0. EVEN LABEL switch 4 (bit 30) to 0. EVEN LABEL switch 2 (bit 31) to 1. EVEN LABEL switch 1 (bit 32) to 0. DIR 27 switch to 0.</p>		

Table 1. Excessive VSWR Code Reset (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>ag. On odd label message block, set switches and controls as listed below:</p> <p>ODD LABEL switch 16 (bit 28) to 0 ODD LABEL switch 8 (bit 29) to 0 ODD LABEL switch 4 (bit 30) to 0 ODD LABEL switch 2 (bit 31) to 1 ODD LABEL switch 1 (bit 32) to 1 DIR 27 switch to 0 SCALE switch to 127,000 COMMAND HEADING to 180° COMMAND ALT to 100 COMMAND SPEED to 3.5 MACH DISCRETE WORD switch to 2</p> <p>ah. On Intercommunication Amplifier-Control AM-6979/A or AM-7360/A, set UFC/MAN switch to UFC.</p> <p>ai. On GND PWR control panel assembly, set and hold 1 switch to A on and 2 switch to B ON for 3 seconds.</p> <p>aj. On Electronic Equipment Control C-10380/ASQ (equipment control), press EMCON switch if EMCON is displayed on option displays.</p>	<p>Switches remain on (latched).</p> <p>EMCON is removed from option displays.</p>	<p>1. If switches unlatch in 10 to 30 seconds, apply cooling air to aircraft (A1-F18AC-LMM-000).</p> <p>2. If switches do not remain on, troubleshoot (A1-F18AC-FIM-000, WP012 00).</p> <p>Do Electronic Equipment Control C-10380/ASQ Lamp and Switch Test (A1-F18AC-741-200, WP004 00).</p>

Table 1. Excessive VSWR Code Reset (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
ak. On left and right Digital Display Indicators IP-1317() (LDDI and RDDI), set power switches to DAY or NIGHT and allow 2 minutes for warm-up. Adjust BRT and CONT controls for best display.	1. LDDI and RDDI have display and center pushbutton switch on bottom row is labeled MENU.	1. No display on LDDI, F/A-18A, do table 1 (A1-F18AC-745-200, WP006 00), F/A-18B, do table 1 (A1-F18AC-745-200, WP007 00). 2. No display on RDDI, F/A-18A, do table 2 (A1-F18AC-745-200, WP006 00), F/A-18B do table 2 (A1-F18AC-745-200, WP007 00). 3. If STANDBY is displayed, F/A-18A do table 2 (A1-F18AC-746-200, WP004 00). F/A-18B, do table 2 (A1-F18AC-745-200, WP005 00). 4. If BRT or CONT controls do not affect display, replace left or right Digital Display Indicator IP-1317() (A1-F18AC-745-300, WP004 00).
	2. LDDI has cautions and advisory display.	Replace left Digital Display Indicator IP- 1317() (A1-F18AC-745-300, WP004 00).
al. On Horizontal Indicator IP-1350/A (HI), set OFF/NIGHT/DAY switch to NIGHT or DAY and allow 2 minute warmup. Adjust CRT CONT/BRT control for best display.	HI has display.	1. If no display, F/A-18A do table 3 (A1-F18AC-745-200, WP006 00), F/A-18B do table 3 (A1-F18AC-745-200, WP007 00). 2. If CRT CONT/BRT control does not affect display, replace Horizontal Indicator IP-1350/A (A1-F18AC-745-300, WP006 00).
am. On LDDI, press MENU push-button switch.	LDDI has MENU display.	Replace left Digital Display Indicator IP-1317() (A1-F18AC-745-300, WP004 00).
an. Observe HI.	HI has HSI display.	Press HSI pushbutton switch located on top row, far right side of display.

Table 1. Excessive VSWR Code Reset (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
ao. On ANT SEL control panel assembly, set ANT SEL-COMM 1 switch to LOWER. 2. PROCEDURE.		
<p style="text-align: center;">NOTE</p> <p>Data link system option displays disappear from equipment control after 30 seconds. To make displays reappear, press D/L function select switch again.</p>		
a. On equipment control, press D/L function select switch and adjust BRT/DIM control for best display.	Data link system options are displayed on equipment control option displays (fig 3).	Do electronic equipment control Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
b. On equipment control, enter the assigned test frequency (300-324.9 MHz) using keyboard switches.	Number of depressed keyboard switch is displayed in scratch pad display as frequency digits are entered. A decimal point is automatically displayed in the correct position (fig 3).	Do electronic equipment control Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
c. Press ENT keyboard switch.	Frequency blinks once on scratch pad display and then is displayed steady.	1. If a flashing "Error" is displayed on scratch pad display, press CLR keyboard switch and repeat steps 2b and 2c using a valid data link test frequency. 2. Do electronic equipment control Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
d. On RDDI, press MENU pushbutton switch until BIT pushbutton switch option is displayed.	RDDI has MENU display and center pushbutton switch on top is labeled BIT (fig 3).	Replace right digital display indicator (A1-F18AC-746-300, WP004 00).
e. Press BIT pushbutton switch on MENU display.	RDDI has BIT control display (fig 3).	Replace right digital display indicator (A1-F18AC-745-300, WP004 00)

Table 1. Excessive VSWR Code Reset (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
f. On HI, press VEC pushbutton switch.	1. VEC pushbutton label is boxed on HI (fig 3).	Replace Horizontal Indicator IP-1350/A (A1-F18AC-745-300, WP006 00).
	2. LINK 4 display is provided on LDDI (fig 3).	Replace Horizontal Indicator IP-1350/A (A1-F18AC-745-300, WP006 00).
	3. 2-WAY is displayed on equipment control.	Refer to Data Link System Message Receiving, Transmitting and Mode Control Functional Schematic (A1-F18AC-630-510/(C), WP010 00).
	4. On ID-1956 test set, reply indicator lights R0 and R1 come on and alternately flash.	Proceed to step 2g, table 2.
g. Proceed to table 2, do step 1a then proceed to step 2g to continue.		

Table 2. Data Link System Functional Test

Procedure	Normal Indication	Remedy for Abnormal Indication
<p align="center">System Required Components</p> <p>Band Pass Filter F-1472/ARC Receiver-Transmitter-Processor RT-1379()/ASW</p> <p align="center">Related Systems Required</p> <p>Avionics Cooling System Electrical System Intercommunication and Audio System Maintenance Status Display and Recording System Mission Computer System Multipurpose Display Group VHF/UHF Communication System</p>		

Table 2. Data Link System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
Support Equipment Required		
Part Number or Type Designation	Nomenclature	
SM-511A/ASW	Digital Data Simulator	
ID-1956/ASW	Indicator-Monitor	
1361A	Connector Adapter	
74D420039-1001	F-18 Utility Power Adapter	
Materials Required		
None		
NOTE		
For locator, refer to WP016 00.		
If a malfunction occurs during this test, make sure circuit breakers shown in WP016 00 are closed.		
1. PRELIMINARY		
a. System malfunctions may cause excessive VSWR code to be stored in Receiver-Transmitter-Processor RT-1379()/ASW. If this procedure was referenced from installation procedures of the Band Pass Filter F-1472/ARC, Antenna AS-3557/A or if data link coax cables have been repaired, first do table 1 to clear the code.		
b. Observe WPN SYS FAIL indicator on Digital Display Indicator ID-2150/ASM-612 in nose wheelwell.	WPN SYS FAIL indicator is black (not latched).	If latched, do built-in test/reset procedure (A1-F18AC-LMM-000).
c. Connect intercommunication equipment (A1-F18AC-LMM-000).		

Table 2. Data Link System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>d. On F/A-18A, do the substeps below:</p> <p>(1) Remove EMI cover assembly (A1-F18AC-LMM-000).</p> <p>(2) Open address switch access door on Receiver-Transmitter-Processor RT-1379()/ASW, read and record address switch settings.</p> <p>(3) Close address switch access door.</p> <p>(4) Install EMI cover assembly (A1-F18AC-LMM -000).</p> <p>e. On F/A-18B, do the substeps below:</p> <p>(1) Unfasten fasteners and remove panel (1, fig 1).</p> <p>(2) Open address switch access door on Receiver-Transmitter-Processor RT-1379()/ASW, read and record address switch settings.</p> <p>(3) Close address switch access door.</p> <p>(4) Install panel (1) and secure with fasteners.</p> <p>f. Position Digital Data Simulator SM-511A/ASW (SM-511A) in line of sight of Antenna AS-3557/A (upper UHF antenna).</p>		

Table 2. Data Link System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p style="text-align: center;">NOTE</p> <p>For best performance, the SM-511A antenna must be mounted vertically regardless of SM-511A test set operating position.</p> <p>For correct grounding, the SM-511A antenna mounting bracket must be inserted into one of the two unpainted triangular openings in the feet located around the SM-511A case.</p>		
g. Slide the SM-511A antenna mounting bracket into the vertically oriented and unpainted foot of the SM-511A case.		
h. Connect the SM-511A antenna cable connector to J1 LOW PWR XMTR PWR jack of the SM-511A using coaxial adapter (fig 2).		
i. On SM-511A, connect P1 of power cable W1 to J11 PWR jack (fig 2).		
j. Connect P2 of power cable W1 to 115vac, 400 Hz receptacle on F-18 utility power adapter (fig 2).		
k. On Indicator-Monitor ID-1956/ASW (ID-1956 test set), connect P2 of power cable W5 to J5 POWER jack (fig 2).		
l. Connect P1 of power cable W5 to 115vac, 400 Hz receptacle on F-18 utility power adapter (fig 2).		
m. Connect P1 of receiver data cable W1 to J1 RCVR DATA jack (fig 2).		

Table 2. Data Link System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>n. Connect P2 of receiver data cable W1 to J12 RCVR OUTPUT jack of SM-511A (fig 2).</p> <p>o. Connect F-18 utility power adapter to aircraft (A1-F18AC-LMM-000).</p> <p>p. Apply electrical power (A1-F18AC-LMM-000).</p> <p>q. On ID-1966 test set, set A/C ADDRESS switches to address recorded in step 1d or 1e.</p> <p>r. Set MONITOR MODE switch to RMSG.</p> <p>s. Set DISPLAY UPDATE/HOLD switch to UPDATE.</p> <p>t. Set ON/OFF switch to ON.</p> <p>u. Press CLEAR pushbutton switch, then RESET pushbutton switch.</p> <p>v. On SM-511A, set POWER ON/OFF switch to ON. Allow 10 minute warmup.</p> <p>w. Set RCVR FREQ and XMTR FREQ switches to assigned test frequency (300-324.9 MHz)</p> <p>x. Set ACFT ADDRESS switches to address recorded in step 1d or 1e.</p> <p>y. Set DATA SOURCE switch to GND.</p> <p>z. Set MSG SPACING switch to 16 MSEC.</p>	<p>POWER light comes on.</p> <p>POWER light comes on.</p>	

Table 2. Data Link System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>aa. Rotate HIGH PWR CAL and LOW PWR CAL controls fully ccw.</p> <p>ab. Set XMTR POWER HIGH/LOW switch to LOW.</p> <p>ac. Set MONITOR FUNCTION switch to LOW PWR.</p> <p>ad. Set RANGE HIGH/LOW switch to LOW.</p> <p>ae. Rotate LOW PWR CAL control cw until meter pointer on RF/DATA MONITOR meter is in approximate center of green area.</p> <p>af. Set RF ATTEN control to 0 dB.</p> <p>ag. Set controls as listed below:</p> <p>DATA SOURCE to DIAL MSG MIX to EVEN/ODD MSG SPACING to 96 MSEC</p> <p>ah. On even label message block, set switches as listed below:</p> <p>CANCEL REPLY/REPLY to REPLY (down position) EVEN LABEL switch 16 (bit 28) to 0. EVEN LABEL switch 8 (bit 29) to 0. EVEN LABEL switch 4 (bit 30) to 0. EVEN LABEL switch 2 (bit 31) to 1. EVEN LABEL switch 1 (bit 32) to 0. DIR 27 switch to 0.</p>		

Table 2. Data Link System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>ai. On odd label message block, set switches and controls as listed below:</p> <p>ODD LABEL switch 16 (bit 28) to 0 ODD LABEL switch 8 (bit 29) to 0 ODD LABEL switch 4 (bit 30) to 0 ODD LABEL switch 2 (bit 31) to 1 ODD LABEL switch 1 (bit 32) to 1 DIR 27 switch to 0 SCALE switch to 127,000 COMMAND HEADING to 180° COMMAND ALT to 100 COMMAND SPEED to 3.5 MACH DISCRETE WORD switch to 2</p> <p>aj. On Intercommunication Amplifier-Control AM-6979/A or AM-7360/A, set UFC/MAN switch to UFC.</p> <p>ak. On GND PWR control panel assembly, set 1 switch to A on and 2 switch to B ON.</p> <p>al. On Electronic Equipment Control C-10380/ASQ (equipment control), press EMCON switch if EMCON is displayed on option displays.</p>	<p>Switches remain on (latched).</p> <p>EMCON is removed from option displays.</p>	<p>1. If switches unlatch in 10 to 30 seconds, apply cooling air to aircraft (A1-F18AC-LMM-000).</p> <p>2. If switches do not remain on, troubleshoot (A1-F18AC-FIM-000, WP012 00).</p> <p>Do Electronic Equipment C-10380/ASQ Lamp and Switch Test (A1-F18AC-741-200, WP004 00).</p>

Table 2. Data Link System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
am. On left and right Digital Display Indicators IP-1317() (LDDI and RDDI), set power switches to DAY or NIGHT and allow 2 minutes for warm-up. Adjust BRT and CONT controls for best display.	1. LDDI and RDDI have display and center pushbutton switch on bottom row is labeled MENU.	1. No display on LDDI, F/A-18A, do table 1 (A1-F18AC-745-200, WP006 00), F/A-18B, do table 1 (A1-F18AC-745-200, WP007 00). 2. No display on RDDI, F/A-18A, do table 2 (A1-F18AC-745-200, WP006 00), F/A-18B do table 2 (A1-F18AC-745-200, WP007 00). 3. If STANDBY is displayed, F/A-18A do table 2 (A1-F18AC-745-200, WP004 00). F/A-18B, do table 2 (A1-F18AC-745-200, WP005 00). 4. If BRT or CONT controls do not affect display, replace left or right Digital Display Indicator IP- 1317() (A1-F18AC-745-300, WP004 00).
	2. LDDI has cautions and advisory display.	Replace left Digital Display Indicator IP-1317() (A1-F18AC-745-300, WP004 00).
an. On Horizontal Indicator IP-1350/A (HI), set OFF/NIGHT/DAY switch to NIGHT or DAY and allow 2 minute warmup. Adjust CRT CONT/ BRT control for best display.	HI has display.	1. If no display, F/A-18A do table 3 (A1-F18AC-745-200, WP006 00), F/A-18B do table 3 (A1-F18AC-745-200, WP007 00). 2. If CRT CONT/BRT control does not affect display, replace Horizontal Indicator IP-1350/A (A1-F18AC-745-300, WP006 00).
ao. On LDDI, press MENU pushbutton switch.	LDDI has MENU display.	Replace left Digital Display Indicator IP-1317() (A1-F18AC-745-300, WP004 00).
ap. Observe HI.	HI has HSI display.	Press HSI pushbutton switch located on top row, far right side of display.

Table 2. Data Link System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>aq. On ANT SEL control panel assembly, set ANT SEL-COMM 1 switch to LOWER.</p> <p>2. PROCEDURE.</p>		
<p style="text-align: center;">NOTE</p> <p>Data link system option displays disappear from equipment control after 30 seconds. To make displays reappear, press D/L function select switch again.</p>		
a. On equipment control, press D/L function select switch and adjust BRT/DIM control for best display.	Data link system options are displayed on equipment control option displays (fig 3).	Do Electronic Equipment Control C-10380/ASQ Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
b. On equipment control, if colon is not displayed next to OPER option display, press OPER option select switch.	Colon is displayed next to OPER option display (fig 3).	Do Electronic Equipment Control C-10380/ASQ Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
c. On equipment control, enter the assigned test frequency (300-324.9 MHz) using keyboard switches.	Number of depressed keyboard switch is displayed in scratch pad display as frequency digits are entered. A decimal point is automatically displayed in the correct position (fig 3).	Do Electronic Equipment Control C-10380/ASQ Lamp and Switch Test (A1-F18AC-741-200, WP004 00).
d. Press ENT keyboard switch.	Frequency blinks once on scratch pad display and then is displayed steady.	<p>1. If a flashing "Error" is displayed on scratch pad display, press CLR keyboard switch and repeat steps 2b and 2c using a valid data link test frequency.</p> <p>2. Do Electronic Equipment Control C-10380/ASQ Lamp and Switch Test (A1-F18AC-741-200, WP004 00).</p>

Table 2. Data Link System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
e. On RDDI, press MENU pushbutton switch until BIT pushbutton switch option is displayed.	RDDI has MENU display and center pushbutton switch on top is labeled BIT (fig 3).	Replace right digital display indicator (A1-F18AC-745-300, WP004 00).
f. Press BIT pushbutton switch on MENU display.	RDDI has BIT control display (fig 3).	Replace right digital display indicator (A1-F18AC-745-300, WP004 00).
g. On HI, press VEC pushbutton switch.	1. VEC pushbutton label is boxed on HI (fig 3).	Replace horizontal indicator (A1-F18AC-745-300, WP006 00).
	2. LINK 4 display is provided on LDDI (fig 3).	Replace horizontal indicator (A1-F18AC-745-300, WP006 00).
	3. 2-WAY is displayed on equipment control.	Refer to Data Link System Message Receiving, Transmitting and Mode Control Functional Schematic (A1-F18AC-630-510/(C),WP010 00).
	4. On ID-1966 test set, reply indicator lighted R0 and R1 come on and alternately flash.	Proceed to step 2g, table 2.
h. Observe BIT control display on RDDI (fig 3).	D/L BIT status is GO.	1. If DEGD is displayed, read maintenance codes on digital display indicator (A1-F18AC-LMM-000) and do table 1 (WP015 00).
		2. If NOT RDY is displayed, do table 2 (WP015 00).
		3. If RESTRT is displayed, press ILS/AUG/BCN/D/L pushbutton switch on RDDI. If RESTRT is still displayed, replace receiver-transmitter-processor (A1-F18AC-630-300, WP016 00).

Table 2. Data Link System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>i. Observe LINK 4 display on LDDI and option displays on equipment control (fig 3).</p>	<p>1. UTM Fail is not displayed and items listed below are displayed on LINK 4 display:</p> <ul style="list-style-type: none"> a. CMD MACH is 3.5 b. CMD ALT is 100,000 c. TO WYPT is displayed d. CPL AVAL is displayed e. VECT OK is displayed f. DL command heading marker indicates 180° <p>2. CPL is displayed on equipment control.</p>	<p>4. If NO GO is displayed, read maintenance codes on Digital Display Indicator (A1-F18AC-LMM-000) and do table 1 (WP015 00).</p> <p>Replace receiver-transmitter-processor (A1-F18AC-630-300, WP016 00).</p>
<p>j. On ANT SEL control panel assembly, set ANT SEL-COMM 1 switch to UPPER.</p>		<p>Refer to Vector Mode Coupled Heading Functional Schematic (A1-F18AC-630-510/(C). WP012 02).</p>
<p>k. On RDDI, press ILS/AUG/BCN/D/L pushbutton switch (fig 3).</p>	<p>1. CPL remains displayed on equipment control.</p> <p>2. D/L BIT status displays IN TEST, then GO.</p>	<p>Refer to Vector Mode Coupled Heading Functional Schematic (A1-F18AC-630-510/(C), WP012 02).</p> <p>If DEGD is displayed, read maintenance codes on digital display indicator (A1-F18AC-LMM-000) and do table 1 (WP015 00).</p>

Table 2. Data Link System Functional Test (Continued)

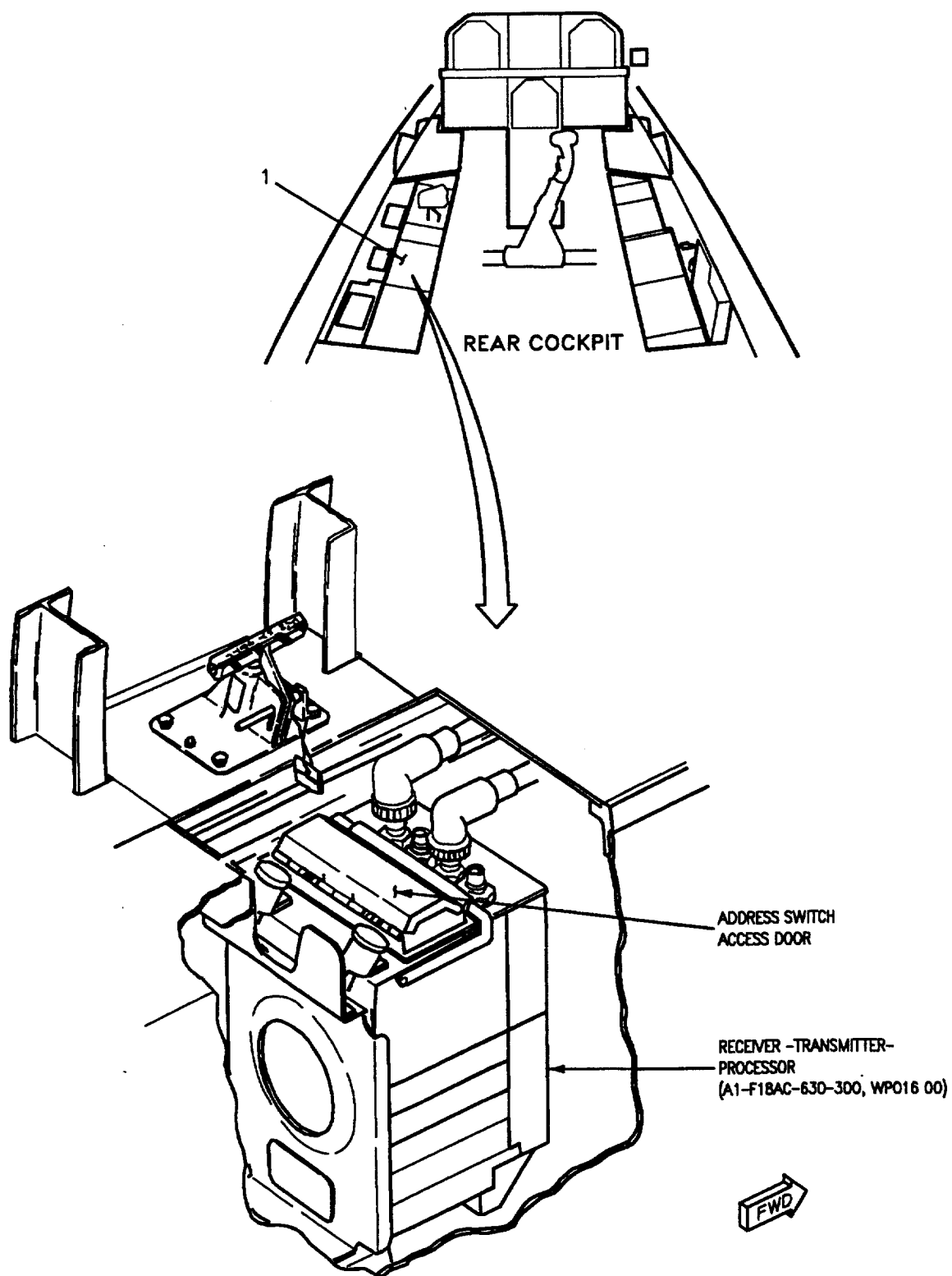
Procedure	Normal Indication	Remedy for Abnormal Indication
<p>l. On equipment control, press EM-CON switch.</p>	<p>1. On LDDI, INHIBIT is displays (fig 3).</p>	<p>Do Electronic Equipment Control C-10380/ASQ Lamp and Switch Test (A1-F18AC-741-200, WP004 00).</p>
<p>m. On equipment control, press EM-CON switch.</p>	<p>2. On ID-1956 test set, reply indicator light R0 or R1 stop flashing and either R0 or R1 remains on.</p>	
	<p>1. On LDDI, INHIBIT is removed from display.</p>	<p>Replace Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00).</p>
	<p>2. On ID-1956 test set, both reply indicator lights R0 and R1 come on and alternately flash.</p>	<p>Replace Control-Converter C-10382/A (A1-F18AC-741-300, WP005 00).</p>
<p>n. On equipment control, press D/L function select switch, then ON/OFF switch.</p>		
<p>3. FINAL</p>		
<p>a. On LDDI and RDDI, set power switches to OFF.</p>		
<p>b. On HI, set OFF/NIGHT/DAY switch to OFF.</p>		
<p>c. On SM-511A test set, set POWER ON/OFF switch to OFF.</p>		
<p>d. On ID-1956 test set, set ON/OFF switch to OFF.</p>		
<p>e. Remove electrical power (A1-F18AC-LMM-000).</p>		
<p>f. Disconnect test equipment.</p>		
<p>g. Disconnect F-18 utility power adapter (A1-F18AC-LMM-000).</p>		

Table 2. Data Link System Functional Test (Continued)

Procedure	Normal Indication	Remedy for Abnormal Indication
<p>h. Disconnect intercommunication equipment (A1-F18AC-LMM-000).</p> <p>i. Observe Digital Display Indicator ID-2150/ASM-612 in nose wheelwell.</p>	WPN SYS FAIL indicator is black (not latched).	Read, record, and then reset maintenance codes (A1-F18AC-LMM-000). If code 016 exists, do table 1 (WP015 00).

3. ILLUSTRATED PARTS BREAKDOWN.

4. This illustrated parts breakdown had data required for identifying and ordering parts. The manual introduction has more information on IPB data.



18AC-630-20-(19-1)14-SCAN

Figure 1. Address switch Location - F/A-18B (Sheet 1)

INDEX NO.	PART NUMBER	DESCRIPTION							UNITS PER ASSY	USE ON CODE	SM&R CODE
		1	2	3	4	5	6	7			
		ADDRESS SWITCH LOCATION									
		F/A-18B									
1	9M381D7E	.							1	*	PAOZZ
	9M381D7	.							1	*	PAOZZ
		*ALTERNATE OR EQUIVALENT PARTS.									
		(WP002 00)									

Figure 1. Address switch Location - F/A-18B

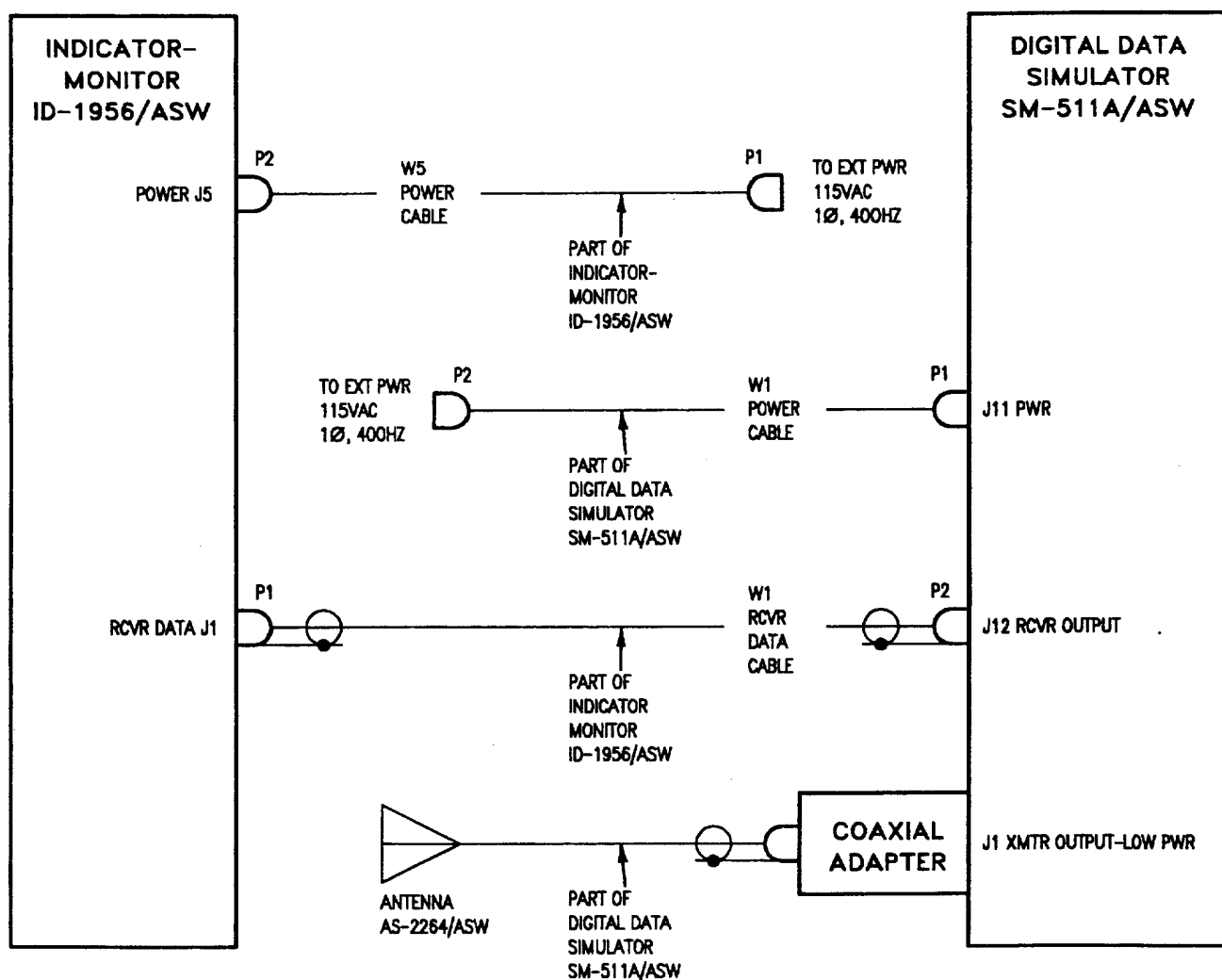
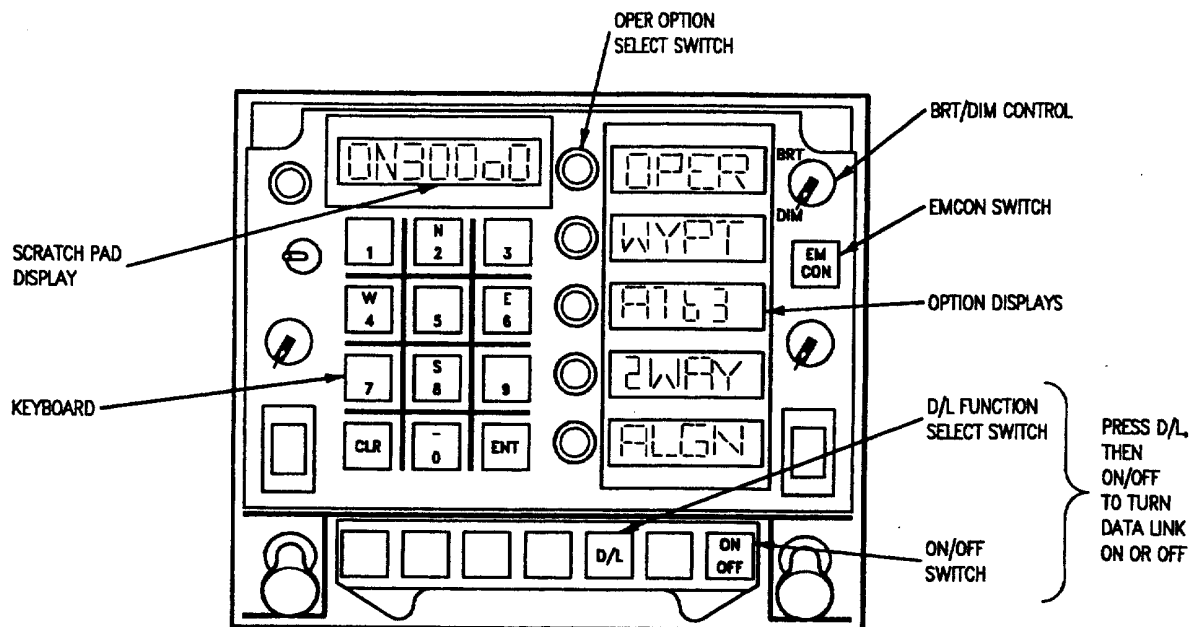
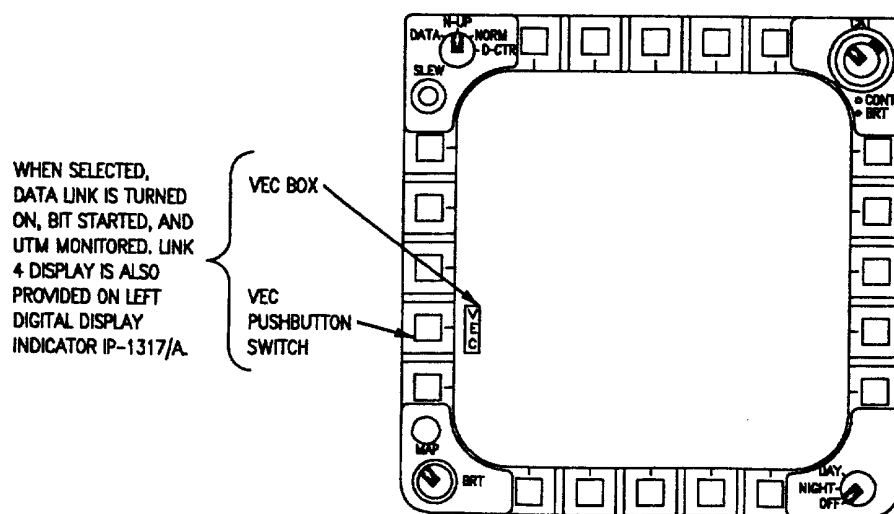


Figure 2. Data Link System Test Set Hookup (Sheet 1)

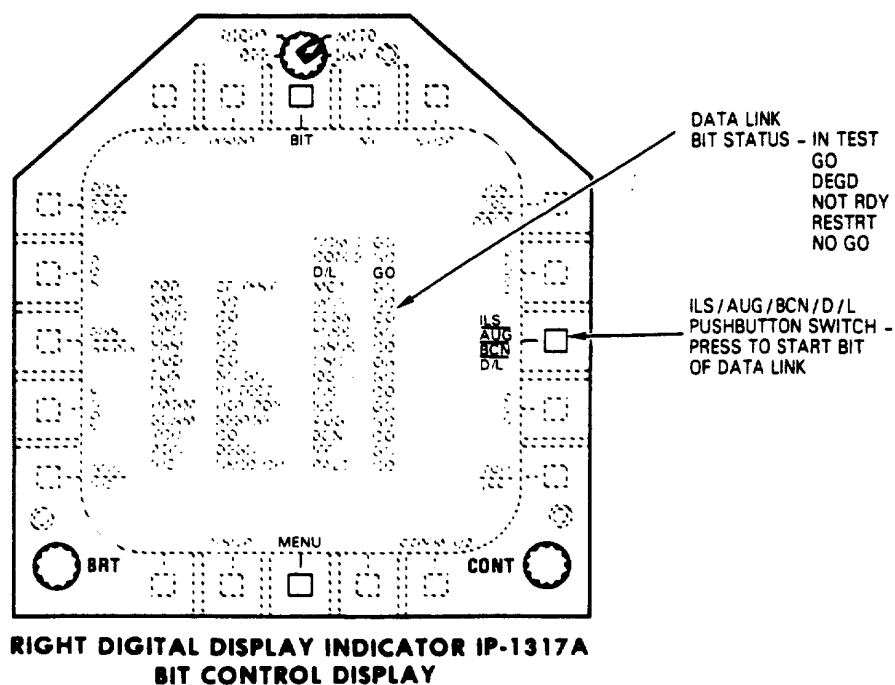
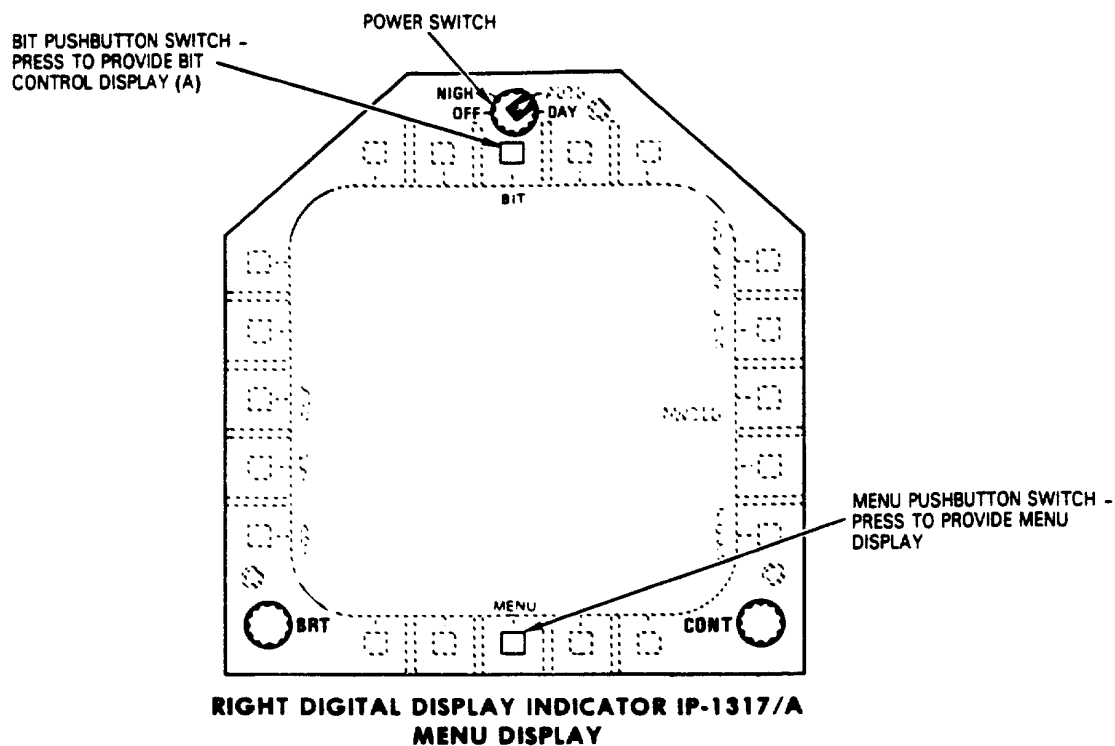


ELECTRONIC EQUIPMENT CONTROL
DATA LINK OPTIONS
WEIGHT ON WHEELS



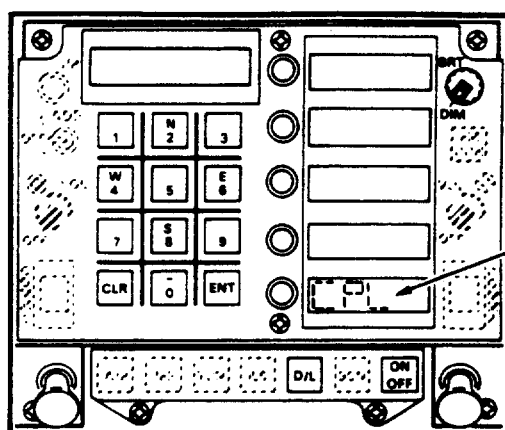
HORIZONTAL INDICATOR

Figure 3. Data Link System Cockpit Displays (Sheet 1)



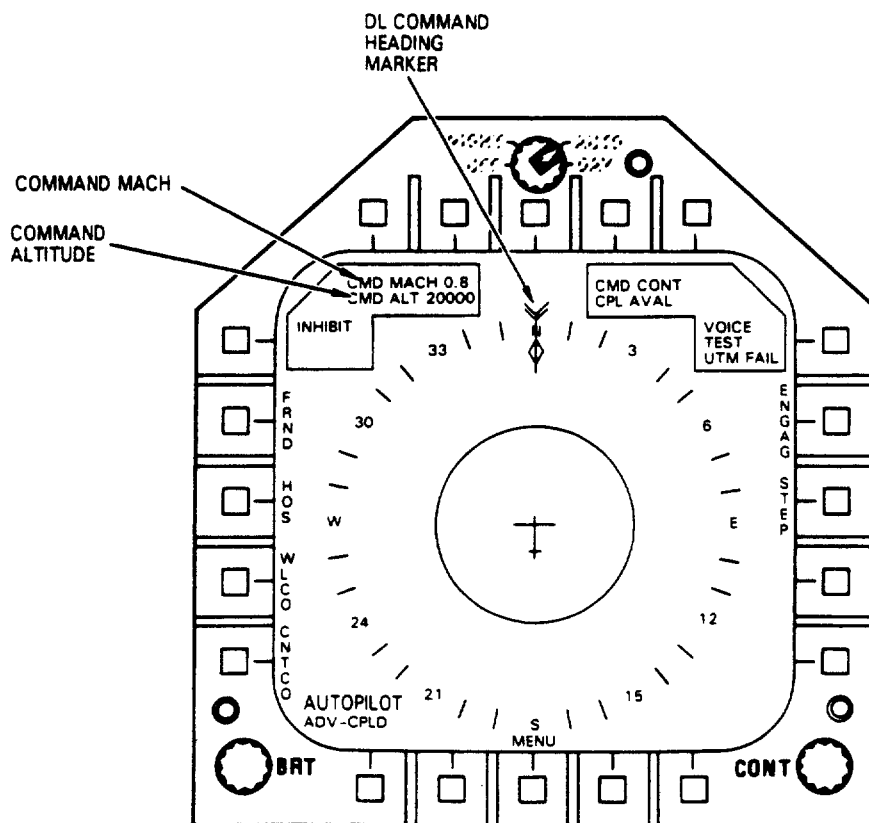
A

Figure 3. Data Link System Cockpit Displays (Sheet 2)



CPL OPTION IS DISPLAYED FOR 30 SECONDS WHEN DATA LINK SYSTEM VECTOR MODE IS READY TO COUPLE TO AUTOMATIC FLIGHT CONTROL SYSTEM

**ELECTRONIC EQUIPMENT CONTROL C-10380/ASQ
DATA LINK VECTOR MODE COUPLE (CPL) OPTION**



**LEFT DIGITAL DISPLAY INDICATOR IP-1317/A
VECTOR MODE LINK 4 DISPLAY**

Figure 3. Data Link System Cockpit Displays (Sheet 3)

ORGANIZATIONAL MAINTENANCE**TESTING AND TROUBLESHOOTING****TROUBLESHOOTING****DATA LINK SYSTEM****Reference Material**

Line Maintenance Access Doors	A1-F18AC-LMM-010
Line Maintenance Procedures	A1-F18AC-LMM-000

Alphabetical Index

Subject	Page No.
Coax Cable Parameters, Table 5	17
Data Link BIT Status Message NOT RDY, Table 2	2
Maintenance Action For Maintenance Code 016, Table 3	6
Maintenance Action For Maintenance Code 180, Table 4	8
Maintenance Action For System Maintenance Codes, Table 1	1
Memory Inspect Procedure, Table 6	17
Memory Inspect Test Displays, Figure 1	20
Unit Address 28 (MC1) MI Addresses, Table 7	19

Record of Applicable Technical Directives

None

Table 1. Maintenance Action For System Maintenance Codes


Maintenance Code	Troubleshooting for Maintenance Codes
 1 6	<ol style="list-style-type: none"> 1. Replace Receiver-Transmitter-Processor (A1-F18AC-630-300, WP016 00). 2. If malfunction still exists, do table 3.

Table 1. Maintenance Action For System Maintenance Codes (Continued)

Maintenance Code	Troubleshooting for Maintenance Codes
179	Replace Receiver-Transmitter-Processor RT-1379()/ASW (A1-F18AC-630-300, WP016 00).
180	Do table 4.
<div> <div></div> <div>1</div> </div> If WRA was replaced and malfunction still exists, start troubleshooting at substep (2).	

Table 2. Data Link BIT Status Message NOT RDY

Support Equipment Required	
NOTE	
Alternate item type designations or part numbers are listed in parentheses.	
Part Number or Type Designation	Nomenclature
260-6XLP (AN/USM-311)	Multimeter
Materials Required	
None	
NOTE	
Data Link Message Receiving, Transmitting, and Mode Control Functional Schematic (A1-F18AC-630-510/(C), WP010 00) may be used with this procedure.	
For locator, refer to WP016 00.	
Malfunction is caused by one of the items listed below:	
Aircraft Wiring Control-Converter C-10382/A No. 7 Circuit Breaker/Relay Panel Assembly Receiver-Transmitter-Processor RT-1379()/ASW Receiver-Transmitter-Processor RT-1379()/ASW, Fuse F1 (7A)	

Table 2. Data Link BIT Status Message NOT RDY (Continued)


Procedure	No	Yes
<div style="text-align: center;">  <p>To prevent damage to low level devices (switches/relay contacts), do not test for continuity with multimeter on the RX 1 scale. Pin to pin tests that do not go through switches/relay contacts may use the RX 1 scale.</p> <p style="text-align: center;">NOTE</p> <p>The question used in logic tree “Does continuity exist” means to test for the items listed below:</p> <ol style="list-style-type: none"> 1. Pin to pin test per procedural step. 2. Shorts to ground. 3. Shorts between surrounding pins on connectors. 4. Shorts between shield and conductors. 5. Shield continuity. </div>		
a. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Remove Receiver-Transmitter-Processor RT-1379()/ASW (A1-F18AC-630-300, WP016 00).		
(3) On Receiver-Transmitter-Processor RT-1379()/ASW, remove fuse F1 (A1-F18AC-630-300, WP016 00) and test for continuity. Is fuse good?	b	c
b. Replace Receiver-Transmitter-Processor RT-1379()/ASW (A1-F18AC-630-300, WP016 00). Do step 1	-	-
c. Do the substeps below:		
(1) Apply electrical power (A1-F18AC-LMM-000).		
(2) Does 28vdc exist from:		
F/A-18A: 77P-L001B pin 2 to 77P-L001B pin 8 77P-L001B pin 3 to 77P-L001B pin 8		
F/A-18B: 77P-K001B pin 2 to 77P-K001B pin 8 77P-K001B pin 3 to 77P-K001B pin 8?	h	d
d. Do the substeps below:		
(1) On GND PWR control panel assembly, set and hold 2 switch to B ON for 3 seconds.		

Table 2. Data Link BIT Status Message NOT RDY (Continued)

Procedure	No	Yes
<p>(2) On Electronic Equipment Control C-10380/ASQ, press D/L function select switch, then ON/OFF switch.</p> <p>(3) Does continuity exist from:</p> <p style="padding-left: 40px;">F/A-18A: 77P-L001B pin 4 to 77P-L001B pin 8</p> <p style="padding-left: 40px;">F/A-18B: 77P-K001B pin 4 to 77P-K001B pin 8?</p>	j	e
<p>e. Remove electrical power (A1-F18AC-LMM-000). Does continuity exist from:</p> <p style="padding-left: 40px;">F/A-18A: 77P-L001B pin 32 to ground 77P-L001B pin 33 to ground 77P-L001B pin 34 to ground 77P-L001B pin 35 to ground</p> <p style="padding-left: 40px;">F/A-18B: 77P-K001B pin 32 to ground 77P-K001B pin 33 to ground 77P-K001B pin 34 to ground 77P-K001B pin 35 to ground?</p>	g	f
<p>f. Do the substeps below:</p> <p>(1) Open door 13L (A1-F18AC-LMM-010).</p> <p>(2) Disconnect 83P-E001A from Digital Data Computer No. 1.</p> <p>(3) Does continuity exist from:</p> <p style="padding-left: 40px;">F/A-18A: 77P-L001B pin 28 to 83P-E001A pin 55 77P-L001B pin 29 to 83P-E001A pin 56</p> <p style="padding-left: 40px;">F/A-18B: 77P-K001B pin 28 to 83P-E001A pin 55 77P-K001B pin 29 to 83P-E001A pin 56?</p>	g	b
<p>g. Isolate defective aircraft wiring (A1-F18A()-WDM-000). Do step 1</p>	-	-
<p>h. Do the substeps below:</p> <p>(1) Remove electrical power (A1-F18AC-LMM-000).</p> <p>(2) Open door 10L (A1-F18AC-LMM-010).</p> <p>(3) Disconnect 52P-C057F from no. 7 circuit breaker/relay panel assembly.</p>		

Table 3. Maintenance Action For Maintenance Code 016


Support Equipment Required None Materials Required None NOTE Data Link System Interconnect Schematic (A1-F18AC-630-510/(C), WP008 00) may be used with this procedure. For locator, refer to WP016 00. For memory inspect test displays, refer to figure 1, this WP. Malfunction is caused by aircraft wiring.		
Procedure	No	Yes
 To prevent damage to low level devices (switches/relay contacts), do not test for continuity with multimeter on the RX 1 scale. Pin to pin tests that do not go through switches/relay contacts may use the RX 1 scale. NOTE The question used in logic tree “Does continuity exist” means to test for the items listed below: <ol style="list-style-type: none"> 1. Pin to pin test per procedural step. 2. Shorts to ground. 3. Shorts between surrounding pins on connectors. 4. Shorts between shield and conductors. 5. Shield continuity. 		
a. Do the substeps below: (1) Remove Receiver-Transmitter-Processor RT-1379()/ASW (A1-F18AC-630-300, WP016 00).		

Table 3. Maintenance Action For Maintenance Code 016 (Continued)

Procedure	No	Yes
<p>(2) Does continuity exist from:</p> <p style="padding-left: 40px;">F/A-18A: 77P-L001B pin 32 to ground 77P-L001B pin 33 to ground 77P-L001B pin 34 to ground 77P-L001B pin 35 to ground</p> <p style="padding-left: 40px;">F/A-18B: 77P-K001B pin 32 to ground 77P-K001B pin 33 to ground 77P-K001B pin 34 to ground 77P-K001B pin 35 to ground?</p>	b	c
b. Isolate defective aircraft wiring (A1-F18A()-WDM-000)	-	-
c. Install Receiver-Transmitter-Processor RT-1379()/ASW (A1-F18AC-630-300, WP016 00). Do step d	-	-
d. Do the substeps below:		
(1) Obtain MI address for reference code BDMUX1 (table 7) and do table 6	-	-
NOTE		
RDDI DATA readout is 6 octal digits. When a X is indicated in an octal digit location in this procedure, that octal digit is ignored.		
(2) On RDDI, read and record DATA readout display. Does DATA readout display indicate any of the octal digits below:		
XXXXX1 XXXXX3 XXXXX5 XXXXX7?	e	f
e. Remove electrical power (A1-F18AC-LMM-000) and isolate defective aircraft wiring (A1-F18A()-WDM-000) listed below:		
F/A-18A: 77P-L001G PIN to splice point 52J-J029 S009 77P-L001G SOC to splice point 52J-J029 S010		
F/A-18B: 77P-K001G PIN to splice point WTK001 pin 65 77P-K001G SOC to splice point WTK001 pin 66	-	-

Table 3. Maintenance Action For Maintenance Code 016 (Continued)

Procedure	No	Yes
f. Remove electrical power (A1-F18AC-LMM-000) and isolate defective aircraft wiring (A1-18A()-WDM-000) listed below:		
F/A-18A: 77P-L001E PIN to splice point 52J-J029 pin S007 77P-L001E SOC to splice point 52J-J029 pin S008		
F/A-18B: 77P-K001G PIN to splice point WTK001 pin 62 77P-K001G SOC to splice point WTK001 pin 63	-	-

Table 4. Maintenance Action For Maintenance Code 180

Support Equipment Required	
Part Number or Type Designation	Nomenclature
1502-04	Time Domain Reflectometer
74D420048-1001	TDR Adapter Kit
Materials Required	
Specification or Part Number	Nomenclature
MS20995NC20 (CAGE 96906)	Lockwire
NOTE	
Data Link System Message Receiving, Transmitting, and Mode Control Functional Schematic (A1-F18AC-630-510/(C), WP010 00) may be used with this procedure.	
For locator, refer to WP016 00.	
Malfunction is caused by one of the items listed below:	
Antenna AS-3557/A (Upper or Lower Aft Antenna)	
Antenna Selector SA-2292/A	
Band Pass Filter F-1472/ARC	
Coax Cables	
Receiver-Transmitter-Processor RT-1379()/ASW	

Table 4. Maintenance Action For Maintenance Code 180 (Continued)

a. Do the substeps below:		
(1) Apply external electrical power (A1-F18AC-LMM-000).		
(2) On GND PWR control panel assembly, set and hold 1 switch to A ON and 2 switch to B ON for 3 seconds.		
(3) On left and right digital display indicator (LDDI and RDDI), set power switch to DAY or NIGHT and allow 2 minutes for warm up. Adjust BRT and CONT controls for best displays.		
(4) On electronic equipment control (equipment control), turn COMM 1 vol control cw to midposition. Adjust BRT/DIM control for best display.		
(5) On F/A-18B 161354 THRU 161360, turn COMM 1 vol control cw to midposition on rear equipment control. Adjust BRT/DIM control for best display.		
(6) On equipment control, turn COMM 1 channel selector until M is displayed on the COMM 1 channel display.		
(7) On equipment control, pull COMM 1 channel selector to the extended position and release.		
(8) On equipment control, enter an inactive frequency using keyboard switches.		
(9) On equipment control, press ENT keyboard switch.		
(10) On ANT SEL control panel assembly, set ANT SEL-COMM 1 switch to UPPER.		
<div>WARNING</div>		
RF hazard exists which may cause personal injury. Make sure all personnel are at least 1 foot clear of upper VHF/UHF antennas before transmission.		
(11) On right throttle grip, momentarily key COMM 1.		
(12) On RDDI, press MENU pushbutton switch until BIT pushbutton switch option is displayed.		
(13) On RDDI, press BIT pushbutton switch.		
(14) On RDDI, press COM pushbutton switch.		
(15) Is DEGD displayed beside COM 1 on RDDI?	b	1

Table 4. Maintenance Action For Maintenance Code 180 (Continued)

<p>b. Do the substeps below:</p> <p>(1) On ANT SEL control panel assembly, set ANT SEL-COMM 1 switch to LOWER.</p>		
<div style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px auto; width: fit-content;"> WARNING </div> <p>RF hazard exists which may cause personal injury. Make sure all personnel are at least 1 foot clear of upper VHF/UHF antennas before transmission.</p>		
<p>(2) On right throttle grip, momentarily key COMM 1.</p> <p>(3) On RDDI, press COM pushbutton switch.</p> <p>(4) Is DEGD displayed beside COM 1 on RDDI?</p>	c	o
<p>c. Do the substeps below:</p> <p>(1) Remove electrical power (A1-F18AC-LMM-000).</p> <p>(2) Open door 13R (A1-F18AC-LMM-010).</p> <p>(3) Remove Receiver-Transmitter No. 1 (A1-F18AC-600-300, WP003 00).</p> <p>(4) Remove lockwire and disconnect 76P-F004B from Antenna Selector.</p> <p>(5) On F/A-18A, remove Command Launch Computer (A1-F18AC-740-300, WP010 00).</p> <p>(6) On F/A-18A, remove lockwire and disconnect 77P-F003B from Band Pass Filter F-1472/ARC.</p> <p>(7) On F/A-18B, open door 14L (A1-F18AC-LMM-010).</p> <p>(8) On F/A-18B, if installed, remove Receiver-Transmitter (A1-F18AC-760-300, WP010 00).</p> <p>(9) On F/A-18B 161704 AND UP, with Audio Visual Recorder installed, remove Audio Visual Recorder (A1-F18AC-770-300, WP005 00).</p> <p>(10) On F/A-18B, remove lockwire and disconnect 77P-E003B from Band Pass Filter.</p> <p>(11) Connect reflectometer to J2 of Antenna Selector.</p>		

Table 4. Maintenance Action For Maintenance Code 180 (Continued)

(12) On ANT SEL control panel assembly, set ANT SEL-COMM 1 switch to LOWER.		
(13) Apply electrical power (A1-F18AC-LMM-000).		
(14) Using table 5 (this WP) and Repair Tools and Equipment, Time Domain Reflectometer (A1-F18AC-WRM-000), test coax cable and Antenna Selector SA2292/A from: F/A-18A: J2 to 77P-F003B F/A-18B: J2 to 77P-E003B		
(15) Do coax cable and Antenna Selector SA-2292/A test good?	d	g
d. Do the substeps below:		
(1) Remove electrical power (A1-F18AC-LMM-000).		
(2) Remove lockwire and disconnect 76P-F004E from Antenna Selector SA-2292/A.		
(3) Connect reflectometer to 76P-F004E.		
(4) Using table 5 (this WP) and Repair Tools and Equipment, Time Domain Reflectometer (A1-F18AC-WRM-000), test coax cable from: F/A-18A: 76P-F004E to 77P-F003B F/A-18B: 76P-F004E to 77P-F003B		
(5) Does coax cable test good?	e	f
e. Do the substeps below:		
(1) Isolate defective cable using table 5 (this WP), and Repair Tools and Equipment, Time Domain Reflectometer (A1-F18AC-WRM-000).		
(2) Do step r.		
(3) Do Data Link System Functional Test (WP014 00)	-	-
f. Do the substeps below:		
(1) Replace Antenna Selector SA-2292/A (A1-F18AC-600-300, WP008 00).		
(2) Do step r.		
(3) Do Data Link System Functional Test (WP014 00)	-	-

Table 4. Maintenance Action For Maintenance Code 180 (Continued)

<p>i. Do the substeps below:</p> <p>(1) Make sure electrical power is off (A1-F18AC-LMM-000).</p> <p>(2) Remove Band Pass Filter F-1472/ARC (A1-F18AC-630-300, WP015 00).</p> <p>(3) Do Initial Setup using 7mm to TNC adapters connected to directional couplers (channel R and channel B) (WP007 01).</p>		
<p style="text-align: center;">NOTE</p> <p style="text-align: center;">Sweep frequency for Data Link System - 0.300 GHz to 0.325 GHz.</p> <p>(4) Do Insertion Loss Setup (WP007 01).</p> <p>(5) Do Recorder Reference Line Recording for Data Link insertion loss (WP007 01).</p> <p>(6) Connect J1 on Band Pass Filter F-1472/ARC to directional coupler (channel R) and J2 to directional coupler (channel B).</p> <p>(7) Do Measurement Recording (WP007 01). Is insertion loss measurement less than 0.7 dB?</p>		
<p>j. Do the substeps below:</p> <p>(1) Replace Receiver-Transmitter-Processor RT-1379()/ASW (A1-F18AC-630-300, WP016 00).</p> <p>(2) Do step r.</p> <p>(3) Do Data Link System Functional Test (WP014 00)</p>	<p>j</p> <p>-</p>	<p>k</p> <p>-</p>
<p>k. Do the substeps below:</p> <p>(1) Replace Band Pass Filter F-1472/ARC (A1-F18AC-630-300, WP015 00).</p> <p>(2) Do step r.</p> <p>(3) Do Data Link System Functional Test (WP014 00)</p>	<p>-</p>	<p>-</p>
<p>l. Do the substeps below:</p> <p>(1) Remove electrical power (A1-F18AC-LMM-000).</p> <p>(2) Remove Antenna AS-3557/A (upper antenna) (A1-F18AC-600-300, WP005 00).</p> <p>(3) Open door 13R (A1-F18AC-LMM-010).</p>		

Table 4. Maintenance Action For Maintenance Code 180 (Continued)

<p>(4) Remove Receiver-Transmitter RT-1250()/ARC-182(V) No. 1 (A1-F18AC-600-300, WP003 00).</p> <p>(5) Remove lockwire and disconnect 76P-F004E from Antenna Selector SA-2292/A.</p> <p>(6) Connect reflectometer to J5 of Antenna Selector SA-2292/A.</p> <p>(7) On ANT SEL control panel assembly, set ANT SEL-COMM 1 switch to LOWER.</p> <p>(8) Apply electrical power (A1-F18AC-LMM-000).</p> <p>(9) Using table 5 (this WP) and Repair Tools and Equipment, Time Domain Reflectometer (A1-F18AC-WRM-000), test coax cables and Antenna Selector SA2292/A from J5 to 76P-R013A (door 31).</p> <p>(10) Do coax cables and Antenna Selector SA-2292/A test good?</p>	m	n
<p>m. Do substeps below:</p> <p>(1) Remove electrical power (A1-F18AC-LMM-000).</p> <p>(2) Remove lockwire and disconnect 76P-F004B from Antenna Selector SA-2292/A.</p> <p>(3) Connect reflectometer to 76P-F004B.</p> <p>(4) Using table 5 (this WP) and Repair Tools and Equipment, Time Domain Reflectometer (A1-F18AC-WRM-000), test coax cables from 76P-F004B to 76P-R013A (door 31).</p> <p>(5) Do coax cables test good?</p>	e	f
<p>n. Do the substeps below:</p> <p>(1) Replace Antenna AS-3557/A (upper antenna) (A1-F18AC-600-300, WP005 00).</p> <p>(2) Do step r.</p> <p>(3) Do Data Link System Functional Test (WP014 00)</p>	-	-
<p>o. Do the substeps below:</p> <p>(1) Remove electrical power (A1-F18AC-LMM-000).</p> <p>(2) Get access to 76P-F012A through nose wheelwell. Remove lockwire and disconnect 76P-F012A from Antenna AS-3557/A (lower aft antenna).</p>		

Table 4. Maintenance Action For Maintenance Code 180 (Continued)

<p>(3) Open door 13R (A1-F18AC-LMM-010).</p> <p>(4) Remove Receiver-Transmitter RT-1250()/ARC-182(V) No. 1 (A1-F18AC-600-300, WP003 00).</p> <p>(5) Remove lockwire and disconnect 76P-F004E from Antenna Selector SA-2292/A.</p> <p>(6) Connect reflectometer to J5 of Antenna Selector SA-2292/A.</p> <p>(7) Apply electrical power (A1-F18AC-LMM-000).</p> <p>(8) On ANT SEL control panel assembly, set ANT SEL-COMM 1 switch to UPPER.</p> <p>(9) Using table 5 (this WP) and Repair Tools and Equipment, Time Domain Reflectometer (A1-F18AC-WRM-000), test coax cables and Antenna Selector SA-2292/A from J5 to 76P-F012A.</p> <p>(10) Do coax cables and Antenna Selector SA-2292/A test good?</p>	p	q
<p>p. Do the substeps below:</p> <p>(1) Remove electrical power (A1-F18AC-LMM-000).</p> <p>(2) Remove lockwire and disconnect 76P-F004F from Antenna Selector SA-2292/A.</p> <p>(3) Connect reflectometer to 76P-F004F.</p> <p>(4) Using table 5 (this WP) and Repair Tools and Equipment, Time Domain Reflectometer (A1-F18AC-WRM-000), test coax cables from 76P-F004F to 76P-F012A.</p> <p>(5) Do coax cables test good?</p>	e	f
<p>q. Do the substeps below:</p> <p>(1) Replace Antenna AS-3557/A (lower aft antenna) (A1-F18AC-600-300, WP007 00).</p> <p>(2) Do step r.</p> <p>(3) Do Data Link System Functional Test (WP014 00)</p>	-	-
<p>r. If disconnected, removed, or opened during this procedure, make sure items listed below are connected, installed, or closed:</p> <p>(1) 76P-F004B (safety with lockwire)</p>		

Table 4. Maintenance Action For Maintenance Code 180 (Continued)

(2) 76P-F004E (safety with lockwire)		
(3) 76P-F004F (safety with lockwire)		
(4) 76P-F012A (safety with lockwire)		
(5) 77P-E003A (F/A-18B) (safety with lockwire)		
(6) 77P-E003B (F/A-18B) (safety with lockwire)		
(7) 77P-F003A (F/A-18A) (safety with lockwire)		
(8) 77P-F003B (F/A-18A) (safety with lockwire)		
(9) 77P-L001A (F/A-18A) (safety with lockwire)		
(10) 77P-K001A (F/A-18B) (safety with lockwire)		
(11) Receiver-Transmitter-Processor RT-1379()/ASW		
(12) Receiver-Transmitter RT- 1250()/ARC-182(V) No. 1		
(13) Interference Blanker MX-9965/A		
(14) Antenna AS-3557/A (Upper Antenna or Lower Aft Antenna)		
(15) Command Launch Computer CP-1001/AWG		
(16) EMI Cover Assembly (F/A-18A)		
(17) Receiver-Transmitter RT-1079()/ALQ-126		
(18) Audio\Visual Recorder RO-1545/AXQ (F/A-18B 161704 AND UP)		
(19) Band Pass Filter F-1472/ARC		
(20) Door 13R		
(21) Door 14L	-	-

Table 5. Coax Cable Parameters

















Cable Number	Connector	Impedance (Ohms)	Dielectric Type	Maximum Millirho	Cable Length (Inches)
RP1A RP1B	 77P-F003A to 77P-L001A	50	PTFE	1600	44
	 77P-F003A to 77P-F004	50	PTFE	1600	15
	 77J-L004 to 77P-L001A	50	PTFE	1600	29
RP1A RP1B	 77P-E003A to 77P-K001A	50	PTFE	1600	77
	 77P-E003A to 77P-E004	50	PTFE	1600	40
	 77J-K004 to 77P-K001A	50	PTFE	1600	37
RP10A	 77P-F003B to 76P-F004E	50	PTFE	1600	45
RP10A	 77P-E003B to 76P-F004E	50	PTFE	1600	100
RU77B RU77B RU77A RU77A	 76P-R013A to 76P-F004B	50	PTFE	1600	249
	 76P-R013A to 76P-F004B	50	PTFE	1600	281
	 76P-R013A to 76P-F019	50	PTFE	1600	133
	 76P-R013A to 76J-R019	50	PTFE	1600	121
	 76-F019 to 76P-F004B	50	PTFE	1600	116
RU77A	 76P-F019 to 76P-F004B	50	PTFE	1600	160
	76P-F012A to 76P-F004F	50	PTFE	1600	31
RU78C	76P-F012A to 76P-F029	50	PTFE	1600	17
RU78A	76J-F029 to 76P-F004F	50	PTFE	1600	14
 F/A-18A  F/A-18B					

Table 6. Memory Inspect Procedure

NOTE

The CONFIG/IDENT number must be known to memory inspect a component. If the CONFIG/IDENT number is not known, refer to A1-F18AC-SCM-000 to determine the CONFIG/IDENT number.

a. Determine the CONFIG/IDENT number of the component listed below (A1-F18AC-SCM-000):

(1) MC1-Digital Data Computer No. 1

b. Use ref code identified in procedure and CONFIG/IDENT from step a to determine ref code MI address.

Table 6. Memory Inspect Procedure (Continued)**NOTE**

Figure 1 shows memory inspect displays.

- c. Apply electrical power (A1-F18AC-LMM-000).
- d. On GND PWR control panel assembly, do substeps below:
 - (1) Set and hold 1 switch to A ON and 2 switch to B ON for 3 seconds.
 - (2) Set and hold 3 switch to B ON for 3 seconds.
- e. On left and right digital display indicators (LDDI and RDDI), set power switches to DAY or NIGHT and allow 2 minute warmup. Adjust BRT and CONT controls for best display.
- f. On RDDI:
 - (1) Press MENU pushbutton switch until BIT pushbutton switch option is displayed.
 - (2) Press BIT pushbutton switch.
 - (3) Press MI pushbutton switch.
- g. On electronic equipment control (equipment control):
 - (1) Verify equipment control displays UNIT and ADDR options.
 - (2) Press UNIT option select switch.
 - (3) Press keyboard switch(es) to enter UNIT address from procedure.
 - (4) Verify scratch pad displays correct UNIT address.
 - (5) Press ENT.
- h. Verify DDI displays correct unit address.
- i. On equipment control, do substeps below:
 - (1) Press ADDR option keyboard switch.
 - (2) Press keyboard switches to enter applicable ref code MI.
 - (3) Verify scratch pad displays correct address.
 - (4) Press ENT.

Table 6. Memory Inspect Procedure (Continued)

j. Verify RDDI displays correct address.
NOTE
DDI DATA readout is 6 octal digits. When an X is indicated in an octal digit location in this procedure, that digit is ignored.
k. Interpret DATA readout.

Table 7. Unit Address 28 (MC1) MI Addresses

REF CODE	SOFTWARE CONFIGURATION (CONFIG/IDENT)					
	69A Address	92A Address	10A Address	12A Address		
BDMUX1	002422	002424	002426	004226		

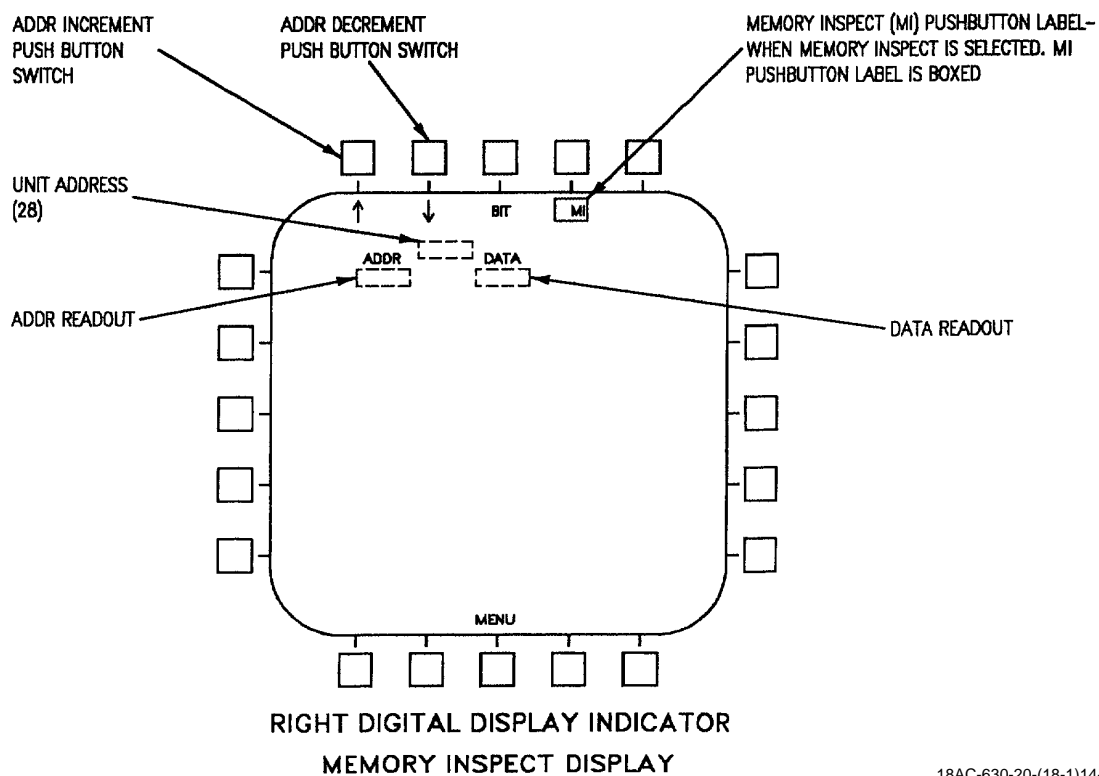
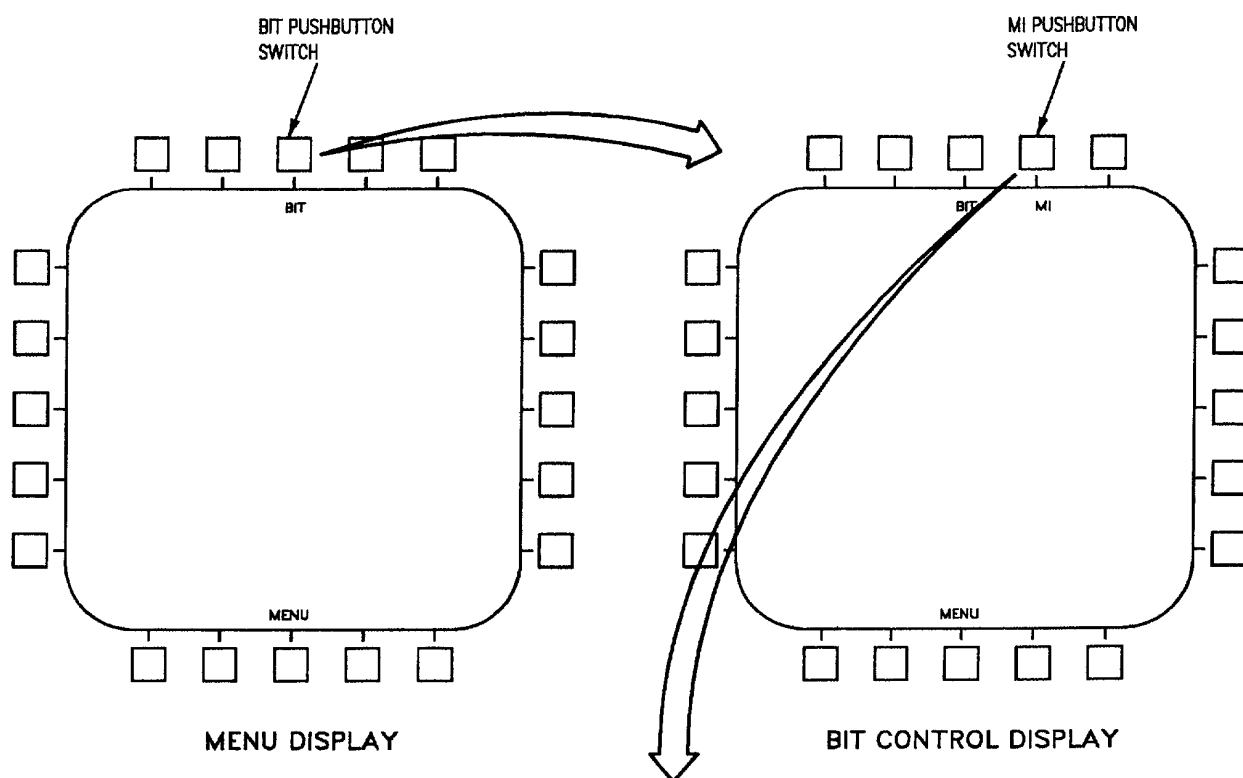
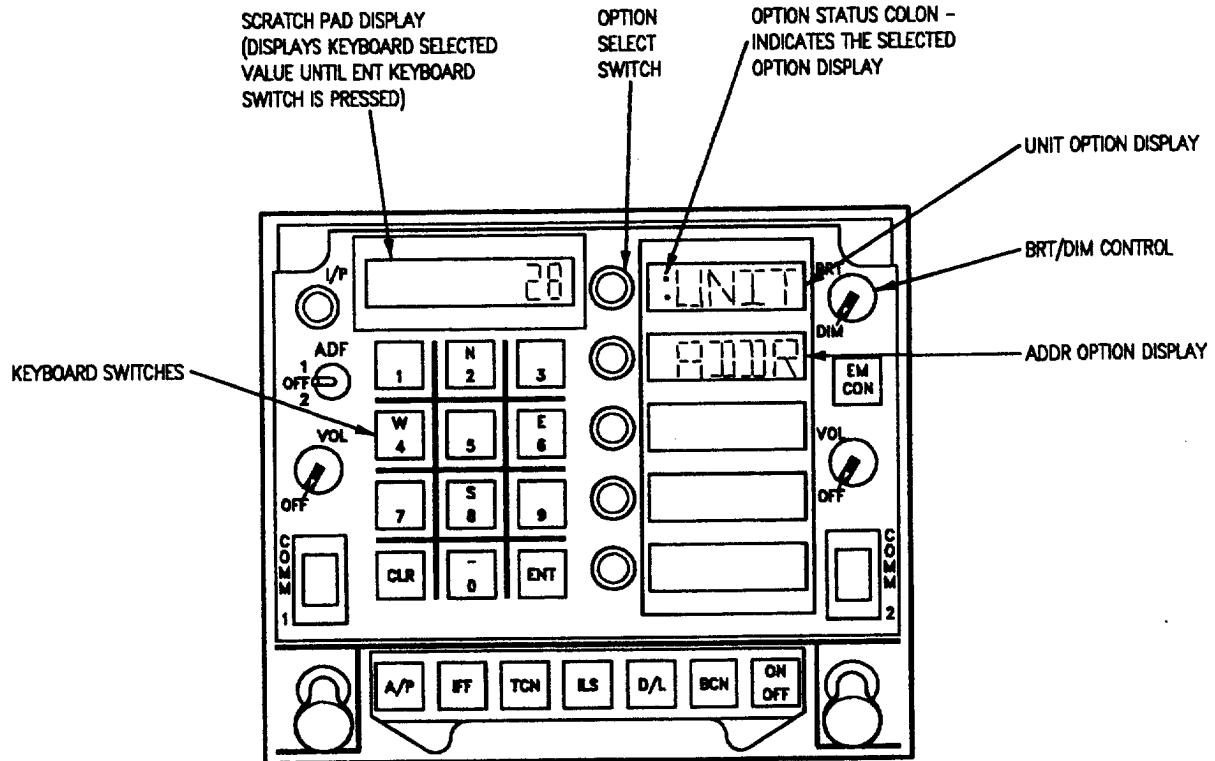


Figure 1. Memory Inspect Test Displays (Sheet 1)



ELECTRONIC EQUIPMENT CONTROL

MEMORY INSPECT DISPLAY

PROVIDED WHEN MI PUSHBUTTON
SWITCH IS SELECTED ON BIT CONTROL
DISPLAY OF RIGHT DIGITAL DISPLAY
INDICATOR

Figure 1. Memory Inspect Test Displays (Sheet 2)

ORGANIZATIONAL MAINTENANCE
TESTING AND TROUBLESHOOTING
LOCATOR
DATA LINK SYSTEM

Reference Material

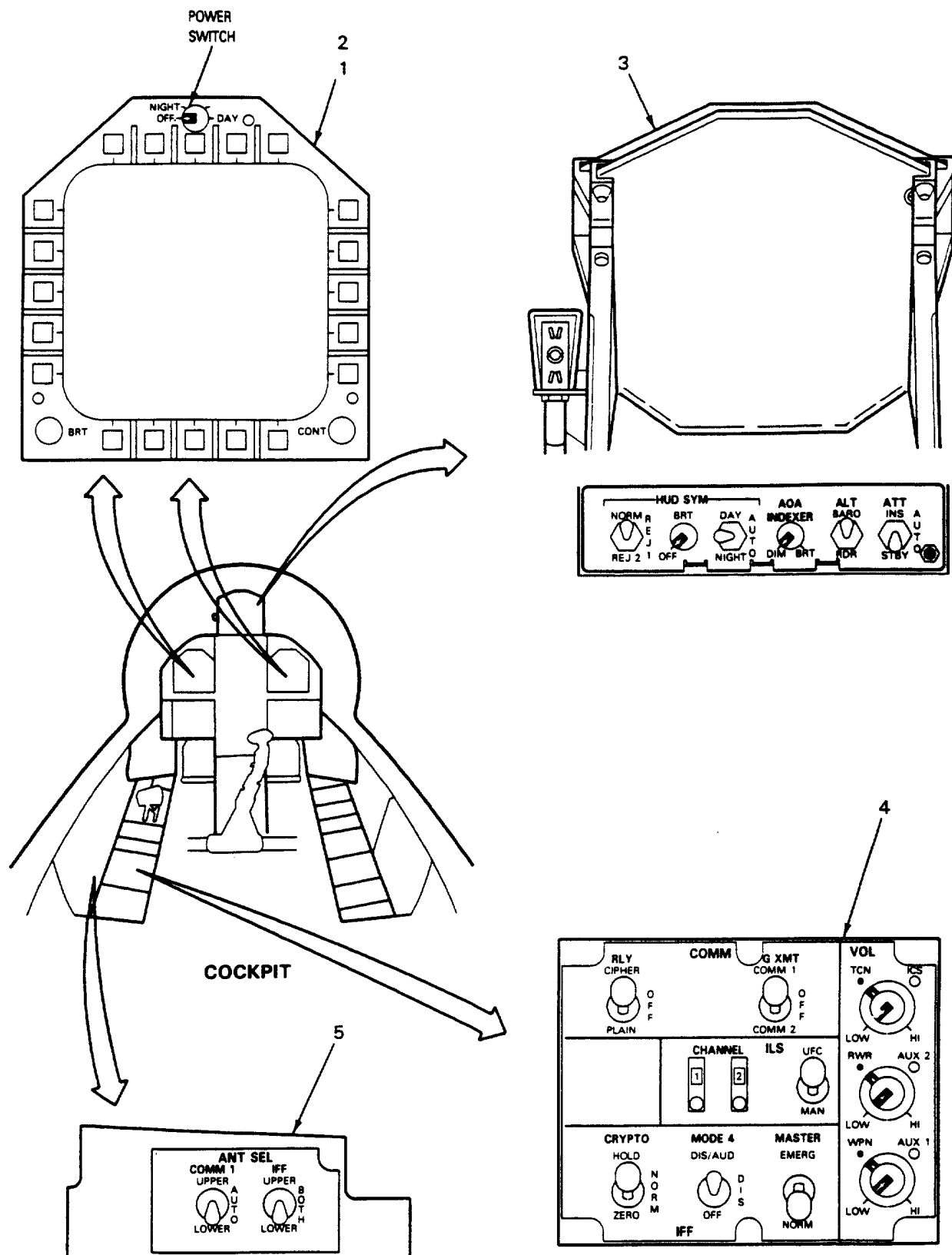
None

Alphabetical Index

Subject	Page No.
Data Link System Locator, Figure 1	2

Record of Applicable Technical Directives

None



18AC-630-20-(17-1)13-CAT1

Figure 1. Data Link System Locator (Sheet 1)

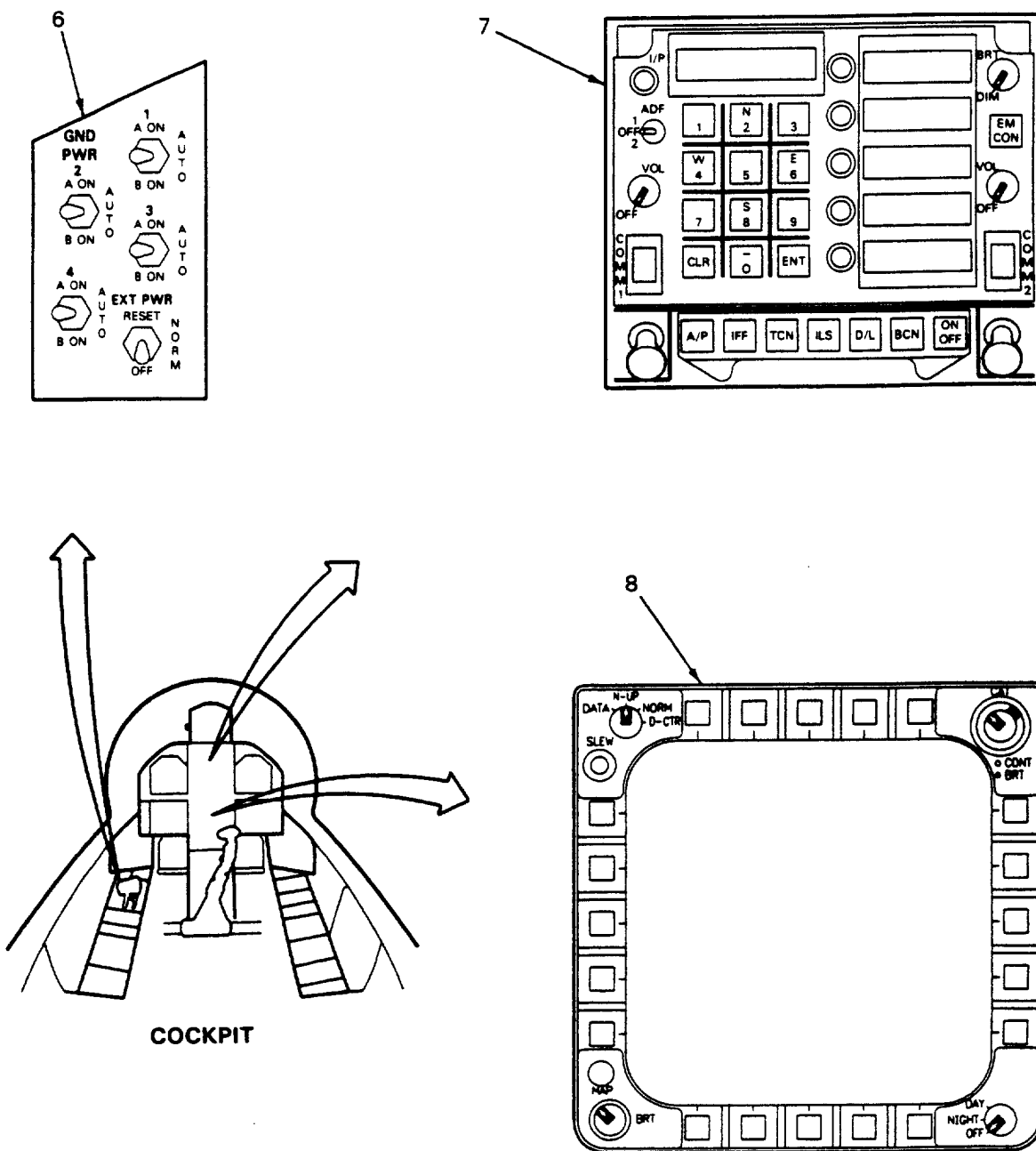


Figure 1. Data Link System Locator (Sheet 2)

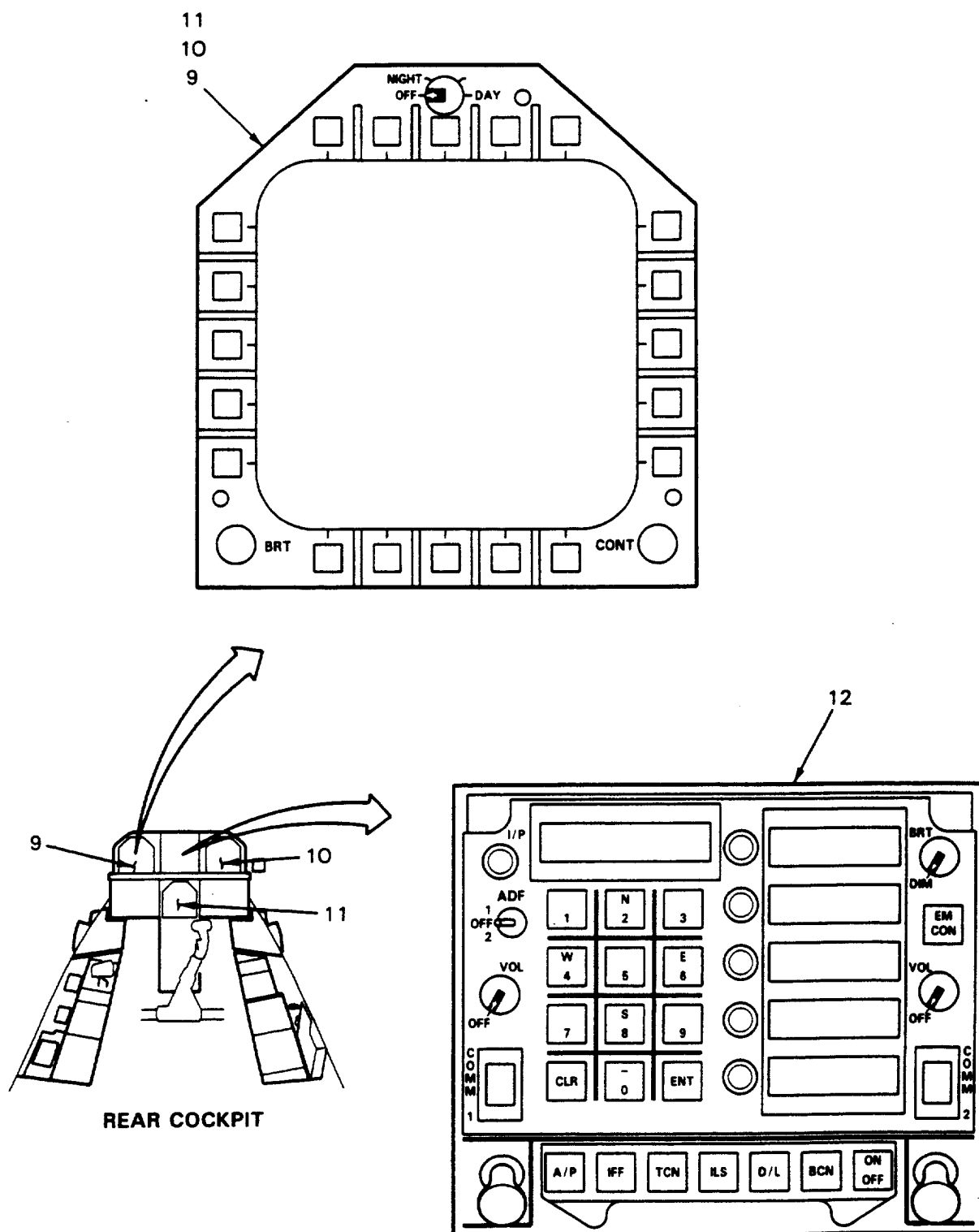
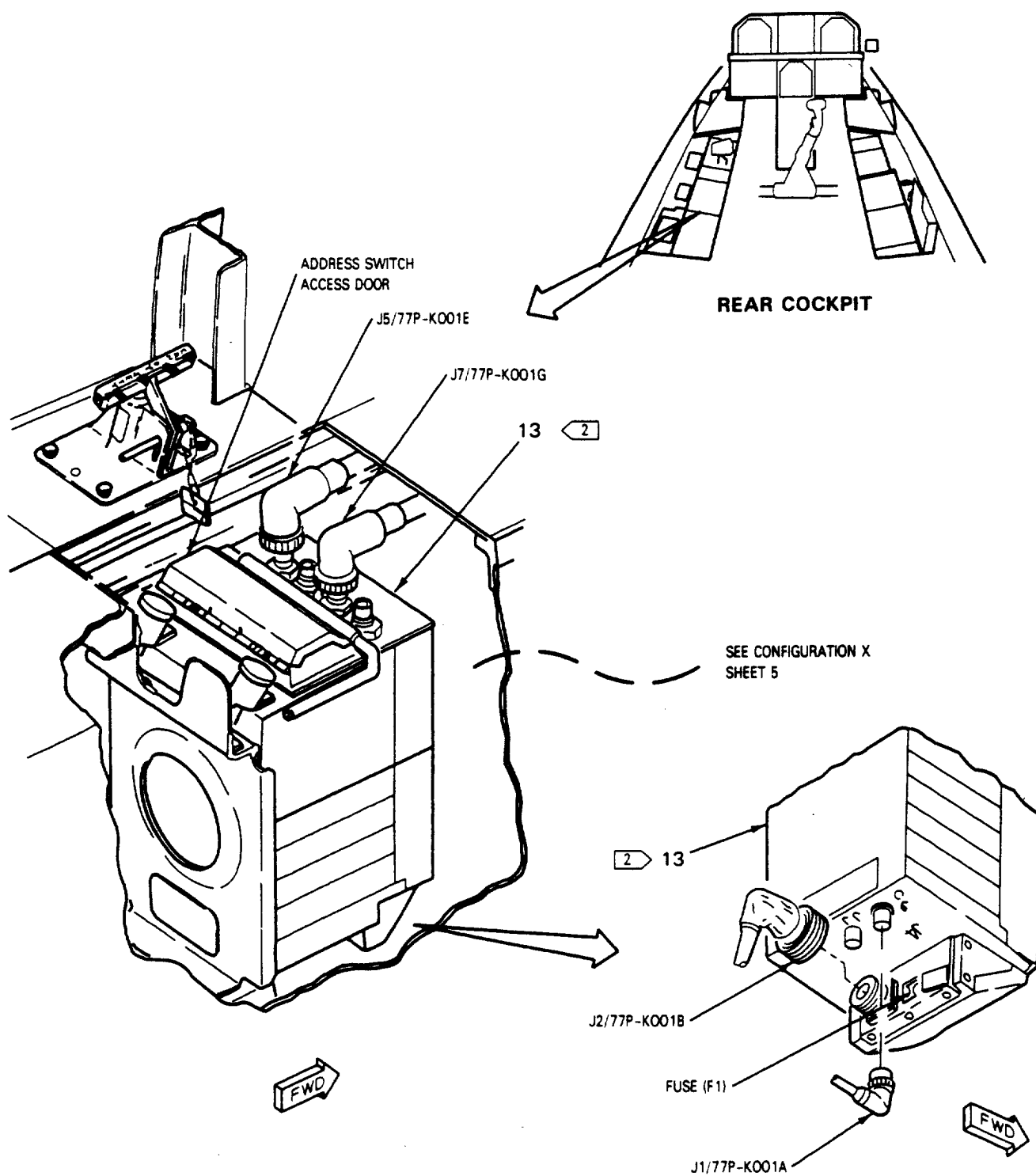


Figure 1. Data Link System Locator (Sheet 3)



18AC-630-20-(17-4)13-SCAN

Figure 1. Data Link System Locator (Sheet 4)

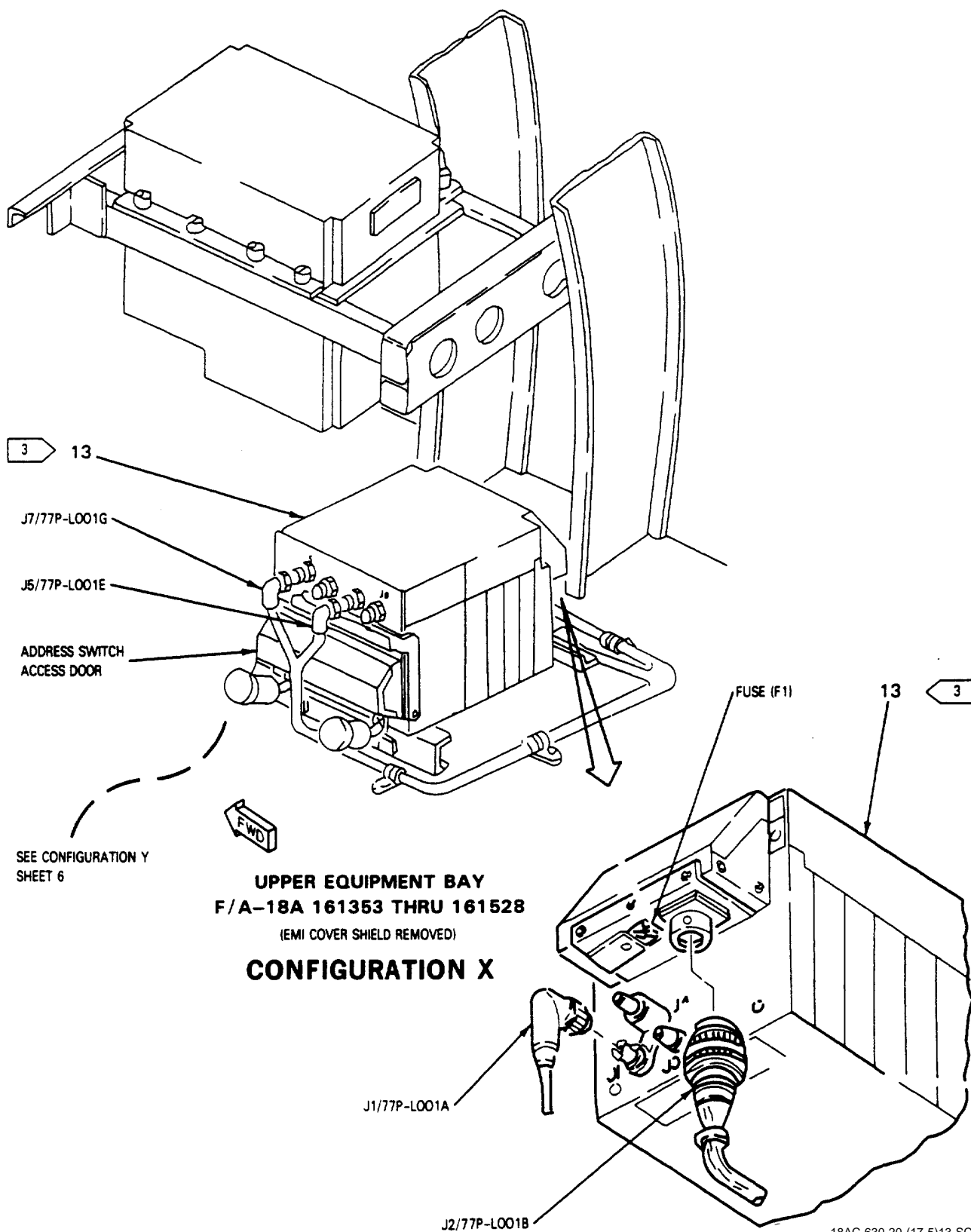
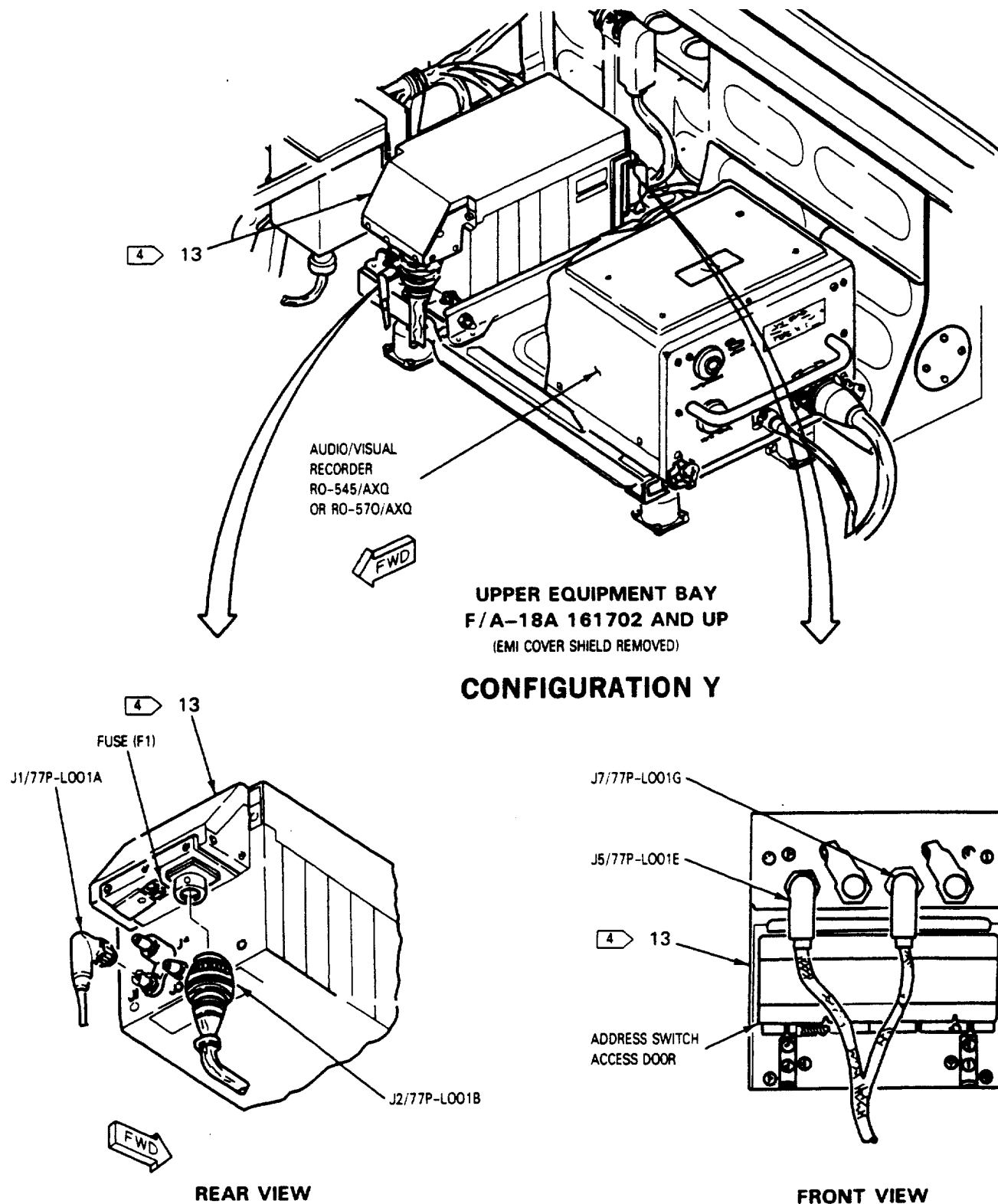
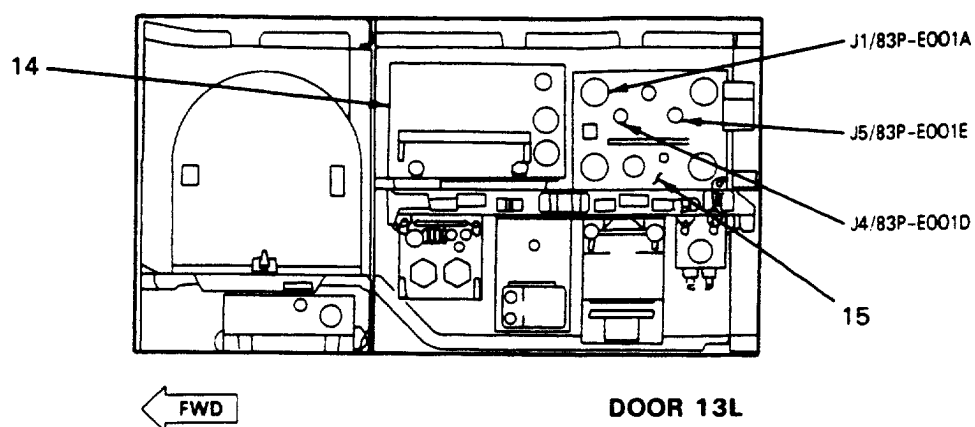


Figure 1. Data Link System Locator (Sheet 5)

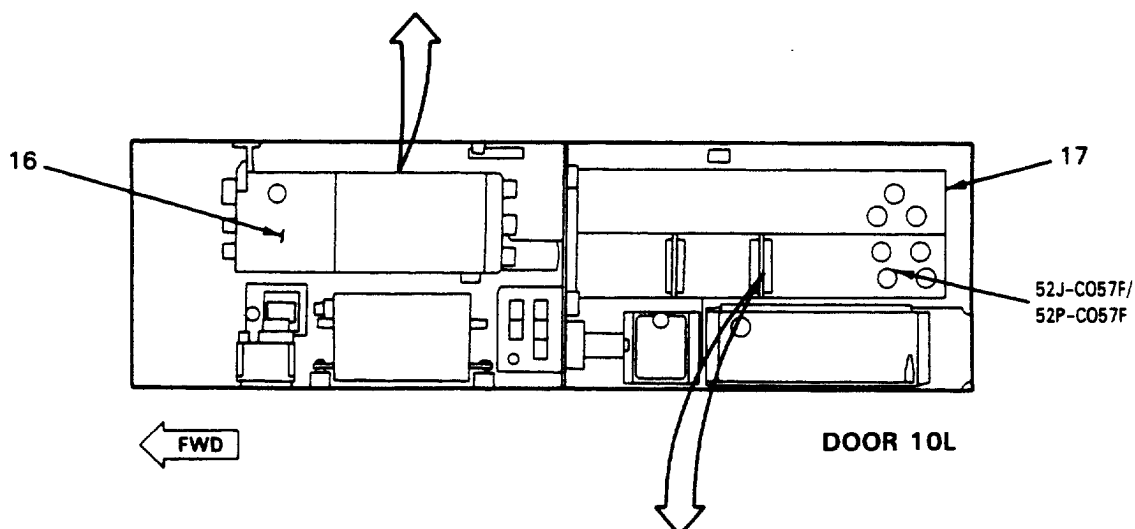


18AC-630-20-(17-6)13-SCAN

Figure 1. Data Link System Locator (Sheet 6)



52A-C159 NO. 8 CIRCUIT BREAKER/RELAY PANEL ASSEMBLY			
ZONE	REF DES	NOMENCLATURE	BUS
D2	85CBC004	MSDRS	MAINT 24/28VDC
D12	80CBC006	MMD	L 115VAC Ø C
E12	80CBC005	MMD	L 115VAC Ø B
F12	80CBC004	MMD	L 115VAC Ø A



52A-C057 NO. 7 CIRCUIT BREAKER/RELAY PANEL ASSEMBLY			
ZONE	REF DES	NOMENCLATURE	BUS
A1	77CBC006	ARC182D-L	L 28VDC
A20	83CBC006	MISSION COMP NO. 1	L 115VAC Ø A
B20	83CBC007	MISSION COMP NO. 1	L 115VAC Ø B
C20	83CBC008	MISSION COMP NO. 1	L 115VAC Ø C

Figure 1. Data Link System Locator (Sheet 7)

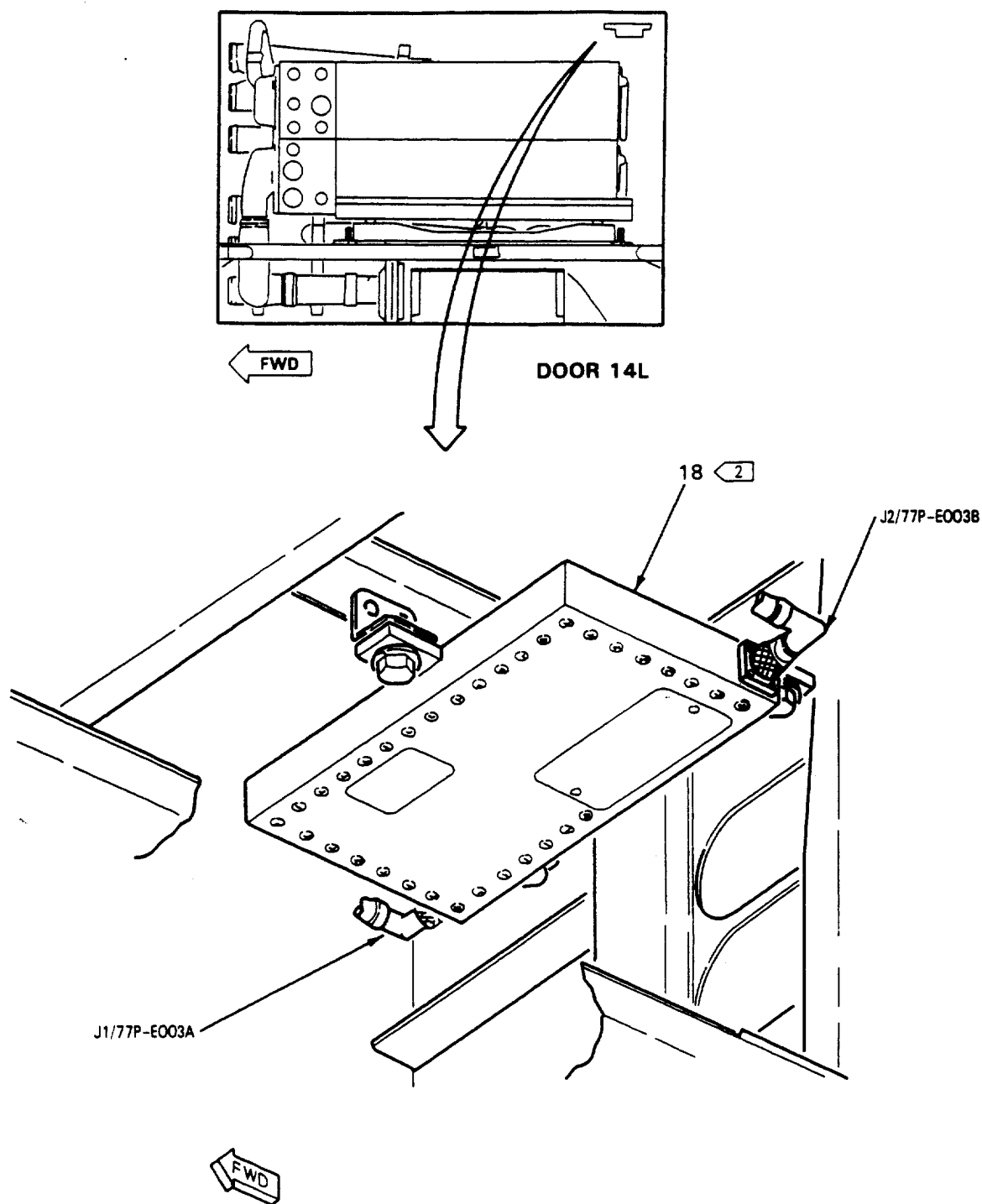


Figure 1. Data Link System Locator (Sheet 8)

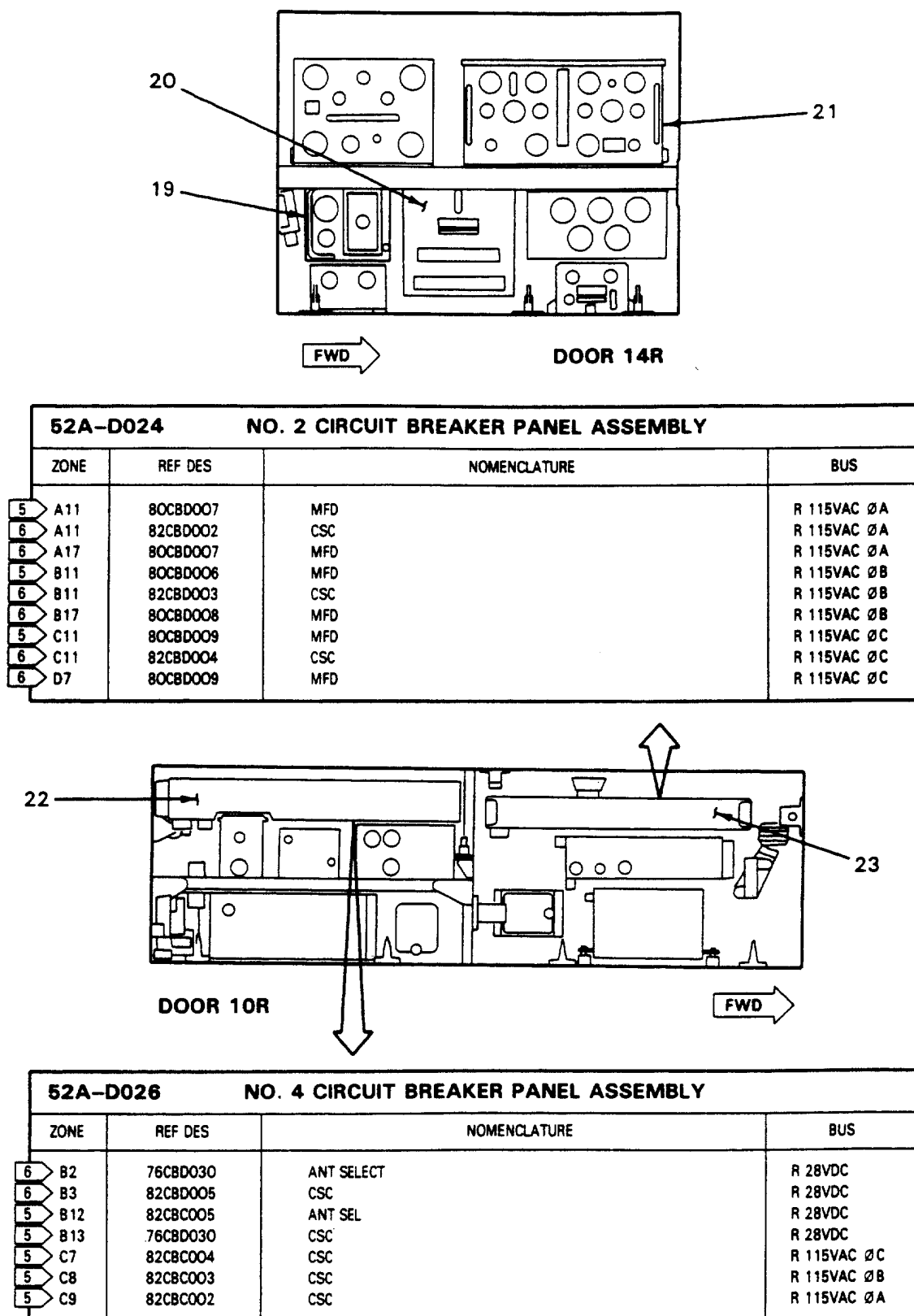


Figure 1. Data Link System Locator (Sheet 9)

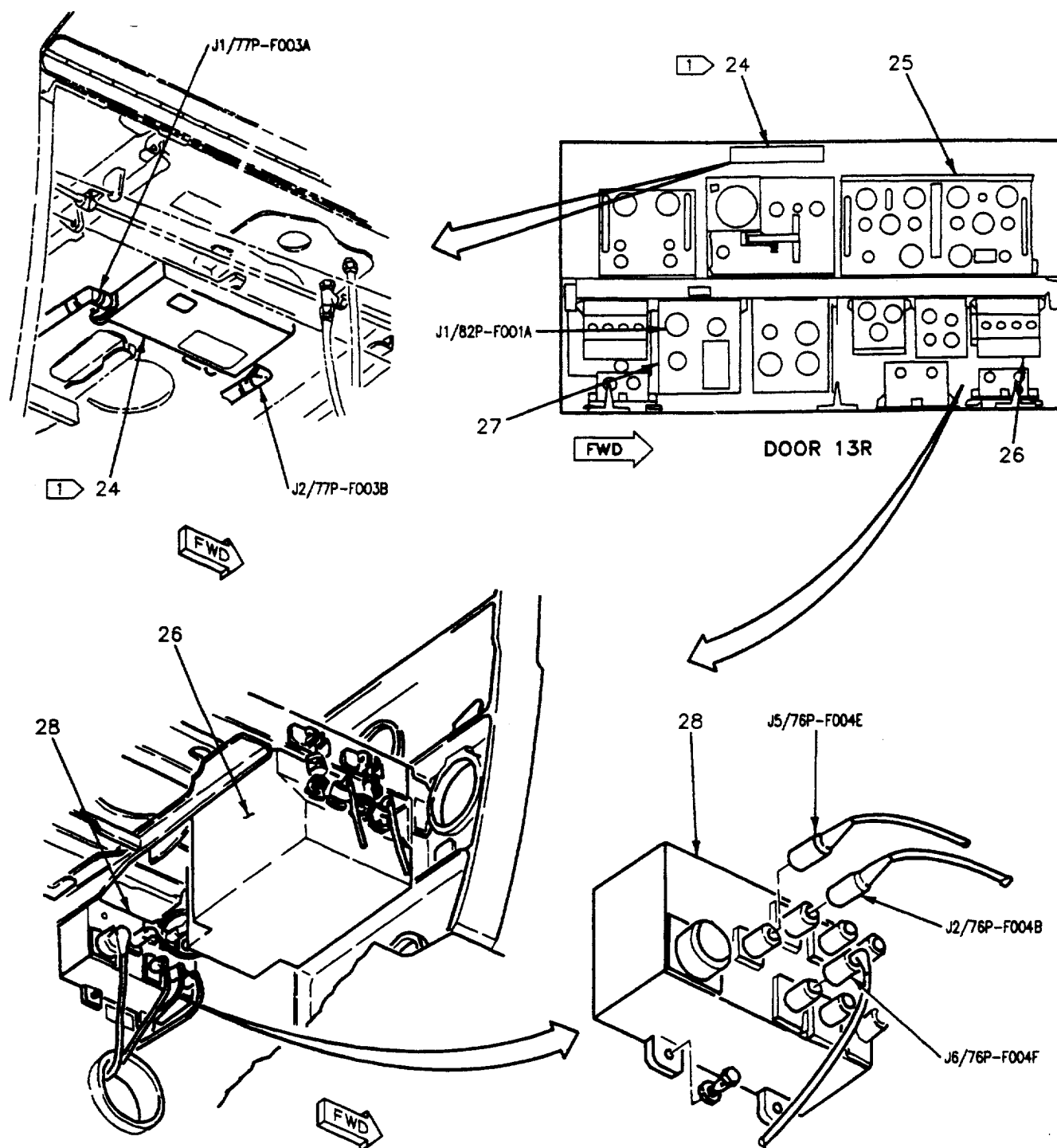
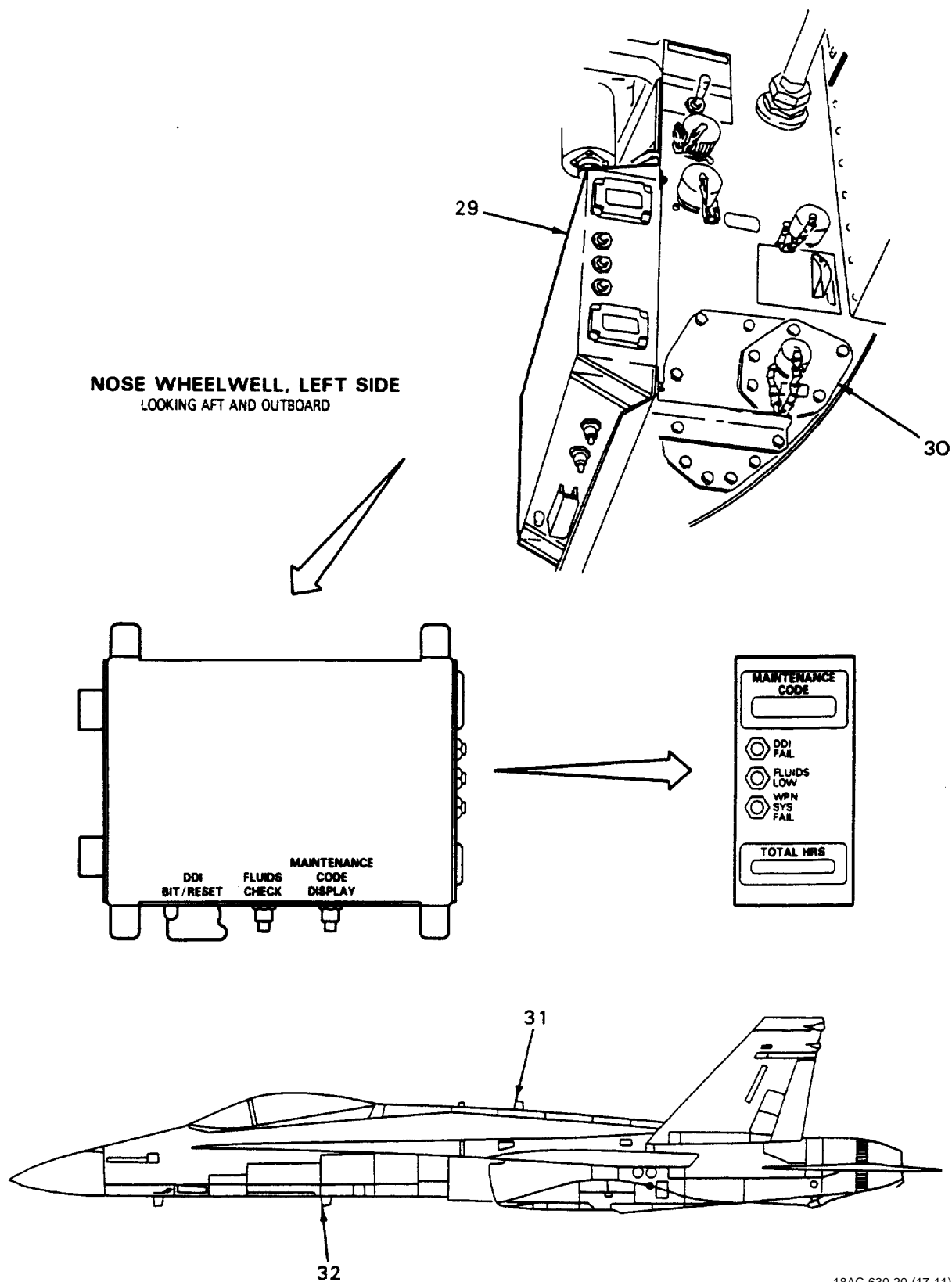


Figure 1. Data Link System Locator (Sheet 10)



18AC-630-20-(17-11)13-SCAN

Figure 1. Data Link System Locator (Sheet 11)



Nomenclature	Index No.	Ref Des
ANTENNA AS-3557/A (LOWER AFT)	32	76E-F012
ANTENNA AS-3557/A (UPPER)	31	76E-R013
ANT SEL CONTROL PANEL ASSEMBLY	5	52A-H089
ANTENNA SELECTOR SA-2292/A	28	76S-F004
ARMAMENT COMPUTER CP-1342/AYQ-9(V)	20	61A-F001
BAND PASS FILTER F-1472/ARC	 24	77FLF003
	 18	77FLE003
CONTROL-CONVERTER C-10382/A	27	82A-F001
DECK EDGE ALIGN RECP	30	77J-G002
DIGITAL DATA COMPUTER NO. 1	15	83A-E001
DIGITAL DISPLAY INDICATOR ID-2150/ASM-612	29	85A-G003
ELECTRONIC EQUIPMENT CONTROL C-10380/ASQ	7	79A-J006
GND PWR CONTROL PANEL ASSEMBLY	6	1A-H004
HEAD-UP DISPLAY UNIT AN/AVQ-28	3	79A-J001
HORIZONTAL INDICATOR IP-1350/A	8	80A-J003
INERTIAL NAVIGATION GROUP OA-8955/ASN-130 OR INERTIAL NAVIGATION UNIT CN-1561/ASN-130A		1468A-E001
INTERCOMMUNICATION AMPLIFIER-CONTROL AM-6979/A OR AM-7360/A	4	76A-H009
LEFT DIGITAL DISPLAY INDICATOR IP-1317()	1	80A-H001
NO. 2 CIRCUIT BREAKER PANEL ASSEMBLY	23	52A-D024
NO. 4 CIRCUIT BREAKER PANEL ASSEMBLY	22	52A-D026
NO. 7 CIRCUIT BREAKER/RELAY PANEL ASSEMBLY	17	52A-C057
NO. 8 CIRCUIT BREAKER/RELAY PANEL ASSEMBLY	16	52A-C159

Figure 1. Data Link System Locator (Sheet 12)












Nomenclature	Index No.	Ref Des
REAR CENTER DIGITAL DISPLAY INDICATOR IP-1318()	11	80A-L016
REAR ELECTRONIC EQUIPMENT CONTROL C-10380/ASQ	12	76A-L028
REAR LEFT DIGITAL DISPLAY INDICATOR IP-1318()	9	80A-K019
REAR RIGHT DIGITAL DISPLAY INDICATOR IP-1318()	10	80A-L017
RECEIVER-TRANSMITTER-PROCESSOR RT-1379()/ASW	 13	77A-K001
	 13	77A-L001
	 13	77A-L001
RECEIVER-TRANSMITTER RT-1250()/ARC NO. 1	26	76A-F001
RIGHT DIGITAL DISPLAY INDICATOR IP-1317()	2	80A-J002
ROLL-PITCH-YAW COMPUTER CP-1330/ASW-44 (FCCA)	25	84A-F001
ROLL-PITCH-YAW COMPUTER CP-1330/ASW-44 (FCCB)	21	84A-F002
SIGNAL DATA RECORDER RO-508/ASM-612	19	85A-F001
<p style="text-align: center;">LEGEND</p> <p>1. AIRCRAFT CONNECTOR LOCATIONS ARE SHOWN IN A1-F18A()-WDM-000.</p> <p> F/A-18A</p> <p> F/A-18B</p> <p> F/A-18A 161353 THRU 161528</p> <p> F/A-18A 161702 AND UP</p> <p> 161353 THRU 161359</p> <p> 161360 AND UP</p> <p> 163427 THRU 163782</p> <p> 163985 AND UP</p>		

Figure 1. Data Link System Locator (Sheet 13)